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REPORT OF THE

MINISTRY OF HEALTH

for the year ended 31st December, 1962

BEING THE ANNUAL REPORT ON THE MEDICAL DEPARTMENT
BY THE ACTING DIRECTOR OF MEDICAL SERVICES
FOR THE YEAR
1962

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CONTENTS

Chapter *Page*

INTRODUCTION

PART I — GENERAL

1. LEGISLATION - - - - - 7
2. STAFF WELFARE - - - - - 8
3. VITAL STATISTICS
    Population - - - - - 9
    Births — Sex, Race, Mother's Age, Registration Area and Residence - - - - 10
    Deaths — Age, Sex, Race, Registration Area and Residence - - - - 14
    Births and Birth Rates - - - - 21
    Deaths and Death Rates - - - - 22
    Infant Mortality and Infant Mortality Rates - - 23
    Still Births and Still Birth Rates - - - 23
    Maternal Mortality and Maternal Mortality Rates - 24
    Migration Statistics by Sea and Air - - 24

PART II — HEALTH DIVISION

4. INTRODUCTION - - - - - 27
5. ENVIRONMENTAL HEALTH SERVICES - - - 35
6. QUARANTINE AND EPIDEMIOLOGICAL SERVICES - - 42
7. SCHOOL HEALTH SERVICES - - - - 53
8. MATERNAL AND CHILD HEALTH SERVICES - - 63
9. HEALTH EDUCATION AND TRAINING - - - 73
10. MARKETS AND HAWKERS - - - - 76
11. OTHER SERVICES - - - - - 78
12. DENTAL HEALTH
    Schools Division - - - - - 81
    Hospitals Division - - - - - 82
    Maternal and Child Health Division - - 82
    Miscellaneous Dental Services - - - 82
    Preventive Dentistry - - - - 83
    Training of Staff - - - - - 83
    Dental Board - - - - - 83
    Dental Clinic, General Hospital - - - 87

Chapter *Page*

PART III — HOSPITALS DIVISION

13. THE HOSPITALS DIVISION

Physical Development - - - - - 95
Beds available at various Government Hospitals, Private Hospitals and Private and Charitable Homes - - - - - 96
Attendances at Out-patient Departments - - 100

14. THE GENERAL HOSPITAL

Clinical Units - - - - - 103
Out-patient Clinics - - - - - 105
Medical Unit I - - - - - 105
Medical Unit II - - - - - 106
Pædiatric Unit - - - - - 106
Surgical Units - - - - - 106
Orthopædic Units - - - - - 108
St. Andrew's Orthopædic Hospital - - - 108
Ear, Nose and Throat Department - - - 109
Ophthalmic Department - - - - 109
Anæsthetic Department - - - - 109
Dietetic Department - - - - 110
Physiotherapy Department - - - 110
Occupational Therapy Department - - 110
Dental Clinic - - - - - 111
Medical Records Department - - - 111

15. THOMSON ROAD HOSPITAL

School of Nursing for Assistant Nurses - - 113
Clinical Laboratory - - - - 113
Dispensary - - - - - 113
Almoner - - - - - - 114
Occupational Therapy - - - - 114

16. OUT-PATIENT SERVICES

Casuality Department - - - - 115
Out-patient Dispensaries - - - - 116
Public Dispensaries - - - - 117
Staff Clinics - - - - - 118
City Council Staff Dispensaries - - - 118
Police Hospital - - - - - 119
Police Families' Clinic - - - - 119
Prisons Hospitals - - - - 119
Opium Treatment Centre - - - - 119
Opium Treatment Follow-up Clinic - - - 119

Chapter *Page*

17. TUBERCULOSIS SERVICE

Tuberculosis Control Unit - - - - 122
Central Tuberculosis Registry - - - 123
Central Culture Laboratory - - - 124
Mass and Group X-ray Surveys - - - 126
Tuberculin Testing and B.C.G. Vaccination - 126
Contact Examination - - - - 127
School Tuberculosis Service - - - 127
Tan Tock Seng Hospital - - - - 131
Rotary Tuberculosis Clinic - - - 132
Almoner's Department - - - - 133
Physiotherapy Division - - - - 133
Occupational Therapy Department - - 133
Diversional Therapy Unit - - - - 134
Red Cross Library - - - - 134
Dental Clinic - - - - - 134

18. SOCIAL HYGIENE

Middle Road Hospital - - - - 145
Incidence of Venereal Diseases - - - 145
Mobile Dispensary - - - - 147
Epidemiological Control Unit - - - 148
Prophylactic Treatment - - - - 148
Skin Clinic - - - - - - 148
Almoner's Department - - - - 148

19. MATERNITY AND GYNÆCOLOGY

Kandang Kerbau Hospital - - - - 152
Maternity Section - - - - - 155
Domiciliary Delivery Service - - - 155
Domiciliary Aftercare Service - - - 155
Gynæcological Section - - - - 155
Pædiatric Section - - - - - 156

20. TRAFALGAR HOME

Dental Service - - - - - 159
Occupational Therapy Department - - 159
Physiotherapy Department - - - - 159
School - - - - - - 159
Almoner's Department - - - - 159
Irrawaddy Road Skin Clinic - - - 160

21. PSYCHOLOGICAL MEDICINE

Woodbridge Hospital - - - - 161
Psychiatric Nursing School - - - 162
Psychiatric Social Welfare Department - - 163
Psychiatric Out-patient Clinics - - - 163
Mental Defective Unit - - - - 165
Chronic Sick Unit - - - - - 165

Chapter *Page*

22. INFECTIOUS DISEASES
    Middleton Hospital - - - - 166
    Diphtheria - - - - - - 167
    Poliomyelitis - - - - - 169
    Typhoid Fever - - - - - 171
    Chicken-pox - - - - - 171
    Dysentery - - - - - - 172
    Measles - - - - - - 173
23. RADIOLOGY - - - - - - 174
24. LABORATORY SERVICES
    Pathology Department - - - 176
    Post Mortem Examination - - - - 178
    History - - - - - - 179
    Bacteriology - - - - - 181
    Mycology - - - - - - 196
    Serelogy - - - - - - 197
    Biochemistry - - - - - 199
25. BLOOD TRANSFUSION SERVICE
    Donors and Recipients - - - - 200
    Publicity - - - - - - 201
26. PHARMACEUTICAL SERVICE
    Staff - - - - - - 202
    Supplies and Cost of Drug - - - - 203
    Stores - - - - - - 204
    Manufacturing Laboratories - - - 204

PART IV — DEPARTMENT OF CHEMISTRY AND INSPECTORATE OF DANGEROUS AND HAZARDOUS MATERIALS

27. DEPARTMENT OF CHEMISTRY AND INSPECTORATE OF DANGEROUS AND HAZARDOUS MATERIALS
    General - - - - - - 209
    Forensic Section - - - - - 211
    Health Section - - - - - 216
    Water and Sewage Section - - - - 220
    Miscellaneous Section - - - - 224
    Revenue Section - - - - - 226
    Toxicology Section - - - -- 229
    Dangerous and Hazardous Materials Section - 233

APPENDICES

I FINANCIAL STATEMENT 1962 - - - - 244

INTRODUCTION

To The Honourable Mr. Yong Nyuk Lin,
Minister for Health,
Singapore.

Sir,

I have the honour to present the Annual Report for the year ended 31st December, 1962.

Among the highlights of the year were the Polio Immunisation Campaign to immunise children between the ages of 6 months to 6 years against polio, the compulsory immunisation against diptheria of all children under the age of 12, the opening of a large outdoor dispensary at Somapah Road in September and a Maternal and Child Health Clinic at Kranji in October.

The outdoor dispensary which was designed and built by the Housing and Development Board is fully equipped and will cater to the needs of some 200 patients a day. The Maternal and Child Health Clinic is the 21st of such clinics to be opened in the rural areas of Singapore. There are two resident midwives in the clinic who are on 24-hour call for home confinements.

The Polio Immunisation Campaign was launched in March and completed in November using oral sabin vaccine in two doses for children from 6 months to 6 years of age. A total of 436,537 doses were administered during the campaign. The administration of oral polio vaccine will become a routine procedure in the following years both for pre-school children as well as primary school entrants.

The report of the Organisation and Methods Branch of the Treasury on the reorganisation of the Ministry for Health was implemented in January 1962, thereby creating four Divisions as follows:—

Headquarters Division
Hospitals Division
Public Health Division
Chemistry Division.

Each Division will be responsible for the day-to-day administration of the institutions and departments within the Division with the Headquarters Division responsible for the co-ordination and formulation of policy.

The health of the State has continued to improve. There was no epidemic and no cases of indigenous malaria.

The estimated population has increased in 1962 by approximately 100,000 from 1.6 million to 1.7 million. The birth rate showed a decrease from 35.5 (1961) to 34.1 while the death rate remained constant at 5.9; the infantile mortality rate per thousand live births is 31.2 (compared to 32.3 in 1961) and the maternal mortality rate is 0.4 has been constant for the last three years.

THE MEDICAL REGISTER — 1962

——	Doctors	Dentists	Female Nurses	Male Nurses	Asst. Nurses	Midwives	Pharmacists
Government Medical Department ..	296	44	871	261	328	678	25
University of Singapore (Teaching Staff) ..	36	13	..	..	..	..	4
Private practice and private institutions ..	390	268	470	19	94	406	72
Housemen	39	..	..	..	..	..	..
Total ..	761	325	1,341	280	422	1,084	101

The ratio of doctors to population is 1 to 2,233.

MEDICAL STAFF

The staffing position has improved but cannot be said to be satisfactory yet. As at 31st December, 1962, there were 296 doctors in the Government service as compared to 251 in 1961. The number of nurses also showed an increase of 994 to 1,132 while the number of student nurses-in-training had increased from 430 in 1961 to 654 in 1962.

The 1962 Estimates contained provision for 50 specialist medical posts, 39 posts of senior registrar, 257 posts of medical and health officer and 50 posts of houseman. As at 31st December, 1962, 31 specialist posts, 21 senior registrar posts and 207 posts of medical and health officers were filled. There were 39 housemen against the provision of 50. Arising from the integration of the City Health Services with that of the Government, 13 posts of assistant health officer and one post of medical officer from the City Council were transferred to the establishment of the Government. Of these City Council posts, only 6 assistant health officers were filled as at 31st December, 1962.

Four officers left the service of the Government during the year 1962 on transfer to the University of Singapore. Three were appointed to lectureships in the University's Departments of Orthopædic Surgery and Pædiatrics and the fourth a Pædiatric Specialist was appointed as Professor of Pædiatrics on joining the University's service. The City Health Officer of the City Council, Dr. Ng See Yook officiated as Director of Medical Services and Permanent Secretary to the Ministry with effect from 17th October, 1960. The Ministry continued to provide all possible avenues of training to the specialists, medical and health officers and members of the nursing service with the W.H.O. offering considerable assistance in this direction apart from other international agencies.

The shortage of staff continued to be felt during 1962. Under the plan for the overseas recruitment of medical officers from the Commonwealth, three doctors from India were appointed medical officers. The Ministry is also in the process of recruiting doctors from Canada under this plan.

At the beginning of 1962, four medical officers were undergoing postgraduate training overseas and during the course of the year a further nine medical officers proceeded overseas, on study awards. Fifteen medical officers returned during the year after having successfully completed their courses of study, in the various medical specialities.

TRAINING OF NURSING AND ANCILLARY PERSONNEL

General nurse training is given in the Nursing School at the General Hospital. At the end of the year there were 654 student nurses in training. A total of 126 nurses qualified and 296 students were recruited into the service during the year (20 males and 276 females).

Assistant nurses are trained at Thomson Road Hospital and Tan Tock Seng Hospital. There were 302 pupil assistant nurse-in-training at the end of the year. A total of 68 assistant nurses qualified and 180 pupils were recruited into the service during the year.

Midwives are trained at the Kandang Kerbau Hospital. There are two categories of training, the pupil midwife and the general trained nurse who takes up midwifery as a post-basic qualification. There were 259 pupil midwives-in-training at the end of the year of which 188 were pupil midwives and 61 pupil midwives with the General Nursing Certificate. A total of 101 midwives qualified of which 53 midwives were also general trained nurses.

Psychiatric nurse training is given at Woodbridge Hospital. There are two categories — basic and post-basic. A total of 36 nurses qualified (19 females and 17 males). Recruitment for the year totalled 56 comprising 30 males and 21 females for the basic course and 5 males for the post-basic course. Tuberculosis nurse training is given at the Tan Tock Seng Hospital. A total of 27 nurses qualified in tuberculosis nursing of which 25 were students for the basic course and two were post-basic students. The Tuberculosis Nursing Certificate of Singapore has been recognised by the British Tuberculosis Association.

The post-basic Public Health Nursing course is held at the Institute of Health. There are 16 candidates in training, of which 15 are nurses from Singapore and one from Borneo.

Under the Hospitals Division work began on the construction of the combined clinics at Queenstown and Still Road, the Prinsep Street Clinic and the Sembawang Clinic. These will be completed early in 1963. No new hospital was undertaken but work had commenced on the extensions to the Thomson Road Hospital for surgical theatre and X-ray department, casualty and out-patient unit to convert Thomson Road Hospital into another general hospital. At the General Hospital alterations to the X-ray Department and mortuary and extensions to out-patients dispensary and a construction of the new building for general services are well in hand.

An "artificial" kidney unit was established during the year from funds donated by the Lee foundation. Equipment for a cardiovascular unit was being installed by the University in the hospital.

The increases in admissions recorded every year without respite is cause for concern as it means that patients are treated for shorter periods in hospitals and that the total beds available are inadequate for the increasing demands. The congestion and pressure at the out-patients clinics continued. During the year a total of 3,253,110 out-patient attendances were recorded from all the clinics, i.e. as if every person in Singapore visited a government clinic twice a year.

In the Kandang Kerbau Hospital admissions numbered 49,773 of which 43,020 were maternity cases and 6,753 were gynæcological cases. The number of deliveries in this hospital was 37,861 as the total number of births in Singapore is 58,977 it indicates that over 60 per cent of the births in Singapore are delivered in this hospital.

FINANCE

During the year $58.6 million was expended on medical and health services in Singapore which represents $34.47 *per capita.*

Detailed information regarding the work of individual divisions, departments, sections, etc. are in different sections of this report.

I have the honour to be,
Sir,
Your obedient servant,

NG SEE YOOK,
L.M.S. (Singapore), D.P.H. (London),
Acting Director of Medical Services,
Singapore.

PART I

GENERAL

Chapter One

LEGISLATION

During the year the following legislation was passed:

The Diphtheria Immunisation (*Amendment*) *Ordinance*, 1962 (*No.* 9 *of* 1962)

This Ordinance provides for four changes to the main Ordinance. Firstly, provision is made to extend the Ordinance to enable medical officers and nurses serving in H.M. Forces in Singapore to carry out intradermal tests and inoculations required under the Ordinance. This is necessary to cover the substantial Armed Services population who normally receive complete medical care from their own Medical Service Units.

Secondly, provision for exemption from inoculation is made under certain circumstances. The Ordinance as it stands only allows postponement for three months at a time. This is inadequate in the case of certain debilitating conditions like unabsented heart disease, chronic nephritis, serious allergies, etc.

Thirdly, the definition of "medical certificates" has to be extended to include such other certificates as may be accepted by the Deputy Director of Medical Services (Health) (mainly from outside the country) as evidence of inoculation; the principal Ordinance is too restricted and only covers certificates issued by registered medical practitioners in Singapore.

Fourthly, opportunity is taken to effect a consequential amendment arising from the reorganisation of the Ministry of Health and reference to Assistant Director of Medical Services (Health) in the principal Ordinance is changed to Deputy Director of Medical Services (Health).

SUBSIDIARY LEGISLATION

The Diphtheria Immunisation Regulations, 1962

These regulations define the detailed procedure for implementing the various provisions of the Ordinance and prescribe the various preparations to be used, the conditions for exemption, etc.

The Fees (Department of Chemistry) Order, 1962

The Order indicates the fees payable to the Department of Chemistry in respect of analyses and investigations carried out by the Department.

Chapter Two

STAFF WELFARE

Prior to 1st January, 1962, environmental health in rural areas was controlled by the Government Public Health Division. There were approximately 1,400 Government employees in the Rural Health Section. Up to 31st December, 1961 one executive officer was on full-time duty of looking after the welfare of these daily rated employees. As a result of an agreement made between the Public Daily Rated Employees' Unions Federation and the Government on the 25th November, 1961, matters concerning labour and welfare were considerably increased. Furthermore, it was expected that in 1962 about 4,000 daily rated employees of the City Council would come under Government control. Therefore with effect from 1st January, 1962 a Labour and Welfare Unit was established in the Ministry headed by a senior executive officer, assisted by two executive officers, two clerical officers, two Labour Lines supervisors and a typist.

Matters such as day-to-day grievances, complaints of differences between labourers themselves and complaints about supervisory staff and vice versa, complaints on terms and conditions of service and various personal welfare matters came under the purview of this Unit. With effect from 1st August, 1962, all matters concerning daily rated employees of integrated departments in this Ministry were transferred from the Labour and Welfare Section of the City Council to this Unit. This Unit also advices the Ministries of Law, Culture, Education and Home Affairs.

During the year, two Departmental Works Committee were established. The senior executive officer (Labour and Welfare) was appointed Chairman of the 1st Departmental Works Committee covering the Ministries mentioned above.

Staff matters concerning grievances of daily rated employees were settled either by discussion or at Departmental Works Committee level. There was no serious labour trouble during the year under review. The new procedure on labour and welfare matters worked satisfactorily.

The financial position of the Government Health Department Labourers' Co-operation credit Society Limited is given in Table 1 below.

Table 1

FINANCIAL SUMMARY OF GOVERNMENT HEALTH DEPARTMENT LABOURERS' CO-OPERATIVE CREDICT SOCIETY LTD.

	Year ended 31-12-61	Year ended 31-12-62
	$ c.	$ c.
Post Office Savings Bank	5,051 97	5,307 86
Chartered Bank	659 39	5,081 29
Cash in transit	1,980 30	1,726 27
Investments	48,530 75	48,530 75
Loans outstanding	8,245 00	8,277 00
Total Credit Balance ...	64,457 41	68,923 17
Membership	234	190
Total staff eligible	1,373	1,400

The Annual Sports of the Singapore Medical Services was held on 28th July, 1962. General Hospital won the Challenge Shield.

Concerts, social activities and children's parties were held in various institutions during the year.

Chapter Three

VITAL STATISTICS

THE population estimates of Singapore by racial group and sex are given in Table 2 and Table 3:

Table 2

POPULATION OF SINGAPORE, 1911 — 1962

Year	Total	Malays	Chinese	Indians and Pakis-tanis	Eura-sians	Europeans	Others
1911 Census	1,303,321	41,806	219,577	27,755	4,671	5,711	3,801
1921 Census	418,358	53,595	315,151	32,314	5,436	6,145	5,717
1931 Census	557,745	65,014	418,640	50,811	6,903	8,082	8,295
1947 Census	938,144	113,803	729,473	68,967	9,110	9,279	7,512
1957 Census	1,445,929	197,059	1,090,596	124,084	11,382	10,826	11,982
1958 Mid-year ..	1,514,000	207,300	1,141,800	129,500	11,700	11,400	12,300
1959 Mid-year ..	1,579,600	217,400	1,190,000	134,600	12,000	12,200	13,400
1960 Mid-year ..	1,634,100	227,300	1,230,700	137,800	12,200	12,700	13,400
1961 Mid-year ..	1,687,300	236,400	1,269,100	141,500	12,800	13,400	14,100
1962 Mid-year ..	1,732,800	243,400	1,302,500	143,700	13,700	14,300	15,200

The racial group 'Malays' includes Indonesians

Table 3

MID-YEAR POPULATION ESTIMATES OF SINGAPORE BY RACIAL GROUP AND SEX, 1962

(In Thousand)

Racial Group	Males	Females	Total
Malays	126.2	117.2	243.4
Chinese	659.2	642.7	1,302.5
Indians and Pakistanis	94.2	49.5	143.7
Eurasians	7.0	6.7	13.7
Europeans	7.8	6.5	14.3
Others	8.3	6.9	15.2
Total:	903.3	829.5	1,732.8

The racial group 'Malays' includes Indonesians

The ratio of females to males is as follows:

1931 — 584 to 1,000
1947 — 819 to 1,000
1957 — 940 to 1,000
1962 — 916 to 1,000

The number of births in 1962 was 58,977 as compared with 59,930 in 1961 showng a decrease of 953.

The crude birth rate in 1962 was 34 per thousand compared with 35.5 in 1961.

Table 4

LIVE-BIRTHS WHICH OCCURRED IN 1962 BY RACIAL GROUP AND AGE OF MOTHER AND BY SEX OF CHILD

Mother's Age (Years)	Total			Malays		Chinese		Indians and Pakistanis		Eura-sians		Euro-peans		Others	
	M. & F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
12	2	..	2	..	1	..	1	..	..	..	..	..	..	..	..
13	5	..	5	..	..	..	4	..	1	..	..	..	..	..	..
14	26	8	18	2	8	4	5	2	5	..	..	..	..	..	..
15	114	54	60	22	21	8	10	24	29	..	..	..	..	..	..
16	273	140	133	63	62	37	40	39	31	..	..	..	..	1	..
17	551	283	268	114	114	122	103	42	50	1	..	2	..	2	1
18	1,083	562	521	219	200	276	254	61	64	1	1	1	..	4	2
19	1,467	783	684	244	203	444	395	81	81	6	3	3	1	5	1
20	2,292	1,143	1,149	355	327	671	686	105	121	5	4	..	2	7	9
21	3,080	1,575	1,505	402	362	1,009	974	141	149	7	7	6	5	10	8
22	3,914	1,991	1,923	432	456	1,351	1,259	179	184	8	9	6	4	15	11
23	3,776	1,948	1,828	417	376	1,367	1,294	138	140	8	5	10	5	8	8
24	3,653	1,899	1,754	334	321	1,357	1,253	167	138	18	15	12	6	11	21
25	3,317	1,689	1,628	359	347	1,138	1,120	156	133	10	11	13	8	13	9
26	4,075	2,107	1,968	388	358	1,543	1,449	138	132	19	7	8	12	11	10
27	3,669	1,853	1,816	316	356	1,389	1,325	108	106	16	9	12	8	12	12
28	3,542	1,853	1,689	338	315	1,365	1,232	113	107	10	17	12	4	15	14
29	*2,802	1,473	1,328	252	219	1,083	1,022	100	57	12	10	14	10	12	10
30	3,075	1,619	1,456	356	294	1,138	1,038	96	97	9	8	10	6	10	13
31	2,445	1,245	1,200	175	161	972	961	71	55	11	7	7	10	9	6
32	2,761	1,412	1,349	235	211	1,076	1,022	81	94	7	9	4	4	9	9
33	1,999	1,047	952	167	143	812	751	48	36	4	7	9	9	7	6
34	2,008	1,067	941	166	149	828	732	53	45	7	3	6	5	7	7
35	1,720	925	795	162	154	698	581	48	45	2	6	10	2	5	7
36	1,421	716	705	104	115	559	547	42	34	6	3	2	5	3	1
37	1,189	589	600	85	87	472	465	22	33	4	4	4	8	2	3
38	1,142	578	564	73	89	472	441	23	26	4	2	3	4	..3	2
39	875	421	454	53	76	346	347	14	17	4	7	2	3	2	4
40	834	425	409	59	61	334	325	24	19	5	2	2	1	1	1
41	513	258	255	23	17	224	229	6	4	2	4	1	1	2	..
42	506	279	227	21	32	252	189	3	6	2	..	..	..	1	..
43	269	147	122	7	11	133	107	5	3	2	..	..	1	..	..
44	263	133	130	10	10	120	114	3	4	..	1	..	..	..	1
45	147	82	65	9	6	72	58	1	..	..	..	..	1	..	..
Over 45	158	78	80	11	8	64	72	3	..	..	..	..	..	..	..
Un-known	11	5	6	1	1	3	2	..	..	..	..	..	..	1	3
Total ..	*58,977	30,387	28,589	5,974	5,671	21,739	20,407	2,137	2,046	190	161	159	125	188	179

* Includes one unknown sex (Chinese).
Figures exclude Live-births of wives of non-locally domiciled Services personnel.
The racial group 'Malays' includes Indonesians.

Table 5

LIVE-BIRTHS WHICH OCCURRED IN 1962

BY REGISTRATION AREA, RACIAL GROUP OF FATHER AND SEX OF CHILD

Racial Group	Total			City Area			Rural Area		
	M. & F.	M.	F.	M. & F.	M.	F.	M. & F.	M.	F.
Malays	11,257	5,773	5,484	7,526	3,819	3,707	3,731	1,954	1,777
Chinese	*41,934	21,631	20,302	*36,974	19,072	17,901	4,960	2,559	2,401
Indians and Pakistanis	4,649	2,376	2,273	4,137	2,117	2,020	512	259	253
Eurasians	361	201	160	333	182	151	28	19	9
Europeans	293	158	135	288	154	134	5	4	1
Others	483	248	235	442	227	215	41	21	20
Total ..	*58,977	30,387	28,589	*49,700	25,571	24,128	9,277	4,816	4,461

* Includes one of unknown sex.

The racial group ‘Malays’ includes Indonesians.

Figures exclude live-births of wives of non-locally domiciled Services personnel.

Table 6

LIVE-BIRTHS WHICH OCCURRED IN 1962

BY PLACE OF USUAL RESIDENCE OF PARENTS, RACIAL GROUP OF FATHER AND SEX OF CHILD

Place of Usual Residence	Total			Malays		Chinese		Indians and Pakistanis		Eurasians		Europeans		Others	
	M. & F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
City	*33,837	17,233	16,603	2,756	2,719	12,745	12,213	1,383	1,348	83	84	123	111	143	128
Katong	9,459	5,005	4,454	1,755	1,625	2,769	2,392	347	316	65	46	2	8	67	67
Serangoon	9,236	4,825	4,411	468	426	3,829	3,528	452	398	41	27	7	4	28	28
Bukit Panjang	2,997	1,535	1,462	290	285	1,078	1,004	145	162	4	1	10	2	8	8
Jurong	2,677	1,374	1,303	218	168	1,117	1,095	38	36	..	1	..	..	1	3
Southern Islands	672	359	313	276	254	69	52	7	6	7	1	..	..	..	..
Federation of Malaya ..	80	46	34	9	7	20	13	4	7	1	..	11	6	1	1
Overseas	19	10	9	1	..	4	5	..	..	..	..	5	4	..	..
Total ..	*58,977	30,387	28,589	5,773	5,484	21,631	20,302	2,376	2,273	201	160	158	135	248	235

* Includes one unknown sex (Chinese).
Figures exclude live-births of wives of non-locally domiciled Services personnel.
The racial group 'Malays' includes Indonesians.

Table 7

LIVE-BIRTHS WHICH OCCURRED IN 1962

BY PLACE OF USUAL RESIDENCE OF PARENTS, REGISTRATION AREA AND SEX OF CHILD

Place of Usual Residence	REGISTRATION AREA								
	Total			City Area			Rural Area		
	M. & F.	M.	F.	M. & F.	M.	F.	M. & F.	M.	F.
City	*33,837	17,233	16,603	*33,534	17,083	16,450	303	150	153
Katong	9,459	5,005	4,454	6,330	3,354	2,976	3,129	1,651	1,478
Serangoon	9,236	4,825	4,411	5,975	3,136	2,839	3,261	1,689	1,572
Bukit Panjang	2,997	1,535	1,462	1,942	1,010	932	1,055	525	530
Jurong	2,677	1,374	1,303	1,720	882	838	957	492	465
Southern Islands	672	359	313	110	57	53	562	302	260
Federation of Malaya	80	46	34	70	39	31	10	7	3
Overseas	19	10	9	19	10	9	..	..	..
Total ..	*58,977	30,387	28,589	*49,700	25,571	24,128	9,277	4,816	4,461

* Includes one of unknown sex.
Figures exclude live-births of wives of non-locally domiciled Services personnel.

Table 8

DEATHS REGISTERED IN 1962

BY REGISTRATION AREA, SEX AND RACIAL GROUP

Racial Group	Total			City Area			Rural Area		
	M. & F.	M.	F.	M. & F.	M.	F.	M. & F.	M.	F.
Malays	1,640	894	746	1,037	562	475	603	332	271
Chinese	7,568	4,442	3,126	6,376	3,778	2,598	1,192	664	528
Indians and Pakistanis	750	540	210	663	486	177	87	54	33
Eurasians	98	50	48	81	47	34	17	3	14
Europeans	42	33	9	40	31	9	2	2	..
Others	80	45	35	67	41	26	13	4	9
Total ..	10,178	6,004	4,174	8,264	4,945	3,319	1,914	1,059	855

The racial group 'Malays' includes Indonesians.
Figures exclude deaths of non-locally domiciled Services personnel and their families.

Table 9

DEATHS REGISTERED IN 1962

BY PLACE OF USUAL RESIDENCE, RACIAL GROUP AND SEX

Place of Usual Residence	Total			Malays		Chinese		Indians and Pakistanis		Eurasians		Europeans		Others	
	M. & F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
City	6,418	3,835	2,583	427	346	2,976	2,082	358	109	22	19	23	8	29	19
Katong	1,522	830	692	273	246	469	372	62	42	20	22	2	..	4	10
Serangoon	1,289	759	530	69	59	599	424	76	37	6	7	2	1	7	2
Bukit Panjang	410	243	167	39	34	170	117	27	16	2	..	2	..	3	..
Jurong	349	217	132	29	23	176	106	12	2	..	..	..	..	..	1
Southern Islands	91	56	35	44	26	11	8	1	..	..	..	..	..	..	1
Federation of Malaya ..	84	52	32	10	12	37	15	4	4	..	..	..	..	1	1
Overseas	15	12	3	3	..	4	2	..	..	..	..	4	..	1	1
Total ..	10,178	6,004	4,174	894	746	4,442	3,126	540	210	50	48	33	9	45	35

Figures exclude non-locally domiciled Services personnel and their families.
The racial group 'Malays' includes Indonesians.

Table 10

DEATHS REGISTERED IN 1962

BY PLACE OF USUAL RESIDENCE, REGISTRATION AREA AND SEX

Place of Usual Residence	REGISTRATION AREA								
	Total			City Area			Rural Area		
	M. & F.	M.	F.	M. & F.	M.	F.	M. & F.	M.	F.
City	6,418	3,835	2,583	6,283	3,760	2,523	135	75	60
Katong	1,522	830	692	835	469	366	687	361	326
Serangoon	1,289	759	530	654	406	248	635	353	282
Bukit Panjang	410	243	167	205	130	75	205	113	92
Jurong	349	217	132	179	111	68	170	106	64
Southern Islands	91	56	35	23	15	8	68	41	27
Federation of Malaya	84	52	32	74	45	29	10	7	3
Overseas	15	12	3	11	9	2	4	3	1
Total ..	10,178	6,004	4,174	8,264	4,945	3,319	1,914	1,059	855

Figures exclude deaths of non-locally domiciled Services personnel and their families.

Table 11

DEATHS REGISTERED IN 1962

BY RACIAL GROUP, SEX AND AGE GROUP

Age Group	Total			Malays		Chinese		Indians and Pakistanis		Eurasians		Europeans		Others	
	M.&F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 day	238	137	101	27	21	96	74	12	6	1	..	..	..	1	..
1 day and under 2 days	213	137	67	12	19	114	50	8	7	2	..	..	..	1	..
2 days and under 3 days	145	92	53	21	11	62	40	8	2	..	..	1	..	..	..
3 days and under 4 days	101	62	39	8	5	47	30	7	3	..	..	..	..	..	1
4 days and under 5 days	71	40	31	3	10	32	20	3	..	..	1	..	..	2	..
5 days and under 6 days	54	37	17	8	2	26	15	1	..	2	..	..	..	..	..
6 days and under 7 days	31	16	15	3	2	12	12	..	1	1	..	..	..	..	..
7 days and under 14 days	148	98	50	25	15	68	30	3	3	2	2	..	..	..	..
14 days and under 21 days	78	47	31	10	6	32	22	5	3	..	..	..	..	..	..
21 days and under 28 days	48	27	21	10	7	13	12	4	..	..	1	..	..	..	1
Neo-Natal Deaths	1,127	693	434	127	98	502	305	51	25	8	4	1	..	4	2
28 days and under 2 months	128	69	59	20	18	39	35	10	6	..	..	..	..	..	..
2 months and under 3 months	100	65	35	24	13	38	19	3	3	..	..	..	..	..	..
3 months and under 4 months	66	39	27	17	15	17	11	5	1	..	..	..	..	..	..
4 months and under 5 months	60	29	31	15	14	10	10	4	7	..	..	..	..	..	..
5 months and under 6 months	61	29	32	14	18	12	12	3	1	..	..	..	..	..	1
6 months and under 7 months	63	42	21	21	14	17	7	4	..	..	..	..	..	..	..
7 months and under 8 months	44	33	11	18	7	13	3	2	..	..	..	..	..	..	1
8 months and under 9 months	59	27	32	16	20	10	9	1	3	..	..	..	..	..	..
9 months and under 10 months	52	27	25	12	6	15	15	..	3	..	..	..	..	..	1
10 months and under 11 months	42	28	14	12	6	13	7	2	1	..	..	..	..	..	..
11 months and under 1 year	41	22	19	7	8	15	8	..	3	..	..	..	..	..	..
Infant Deaths*	1,843	1,103	740	303	237	701	441	85	53	9	4	1	..	4	5

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* Includes neo-natal deaths.
Figures exclude non-locally domiciled Services personnel and their families.
The racial group 'Malays' includes Indonesians.

Table 11—*continued*

DEATHS REGISTERED IN 1962

BY RACIAL GROUP, SEX AND AGE GROUP

Age Group	Total			Malays		Chinese		Indians and Pakistanis		Eurasians		Europeans		Others	
	M.&F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 year	1,843	1,103	740	303	237	701	441	85	53	9	4	1	..	4	5
1 year and under 2 years	271	131	140	51	55	73	68	7	13	..	1	..	1	..	2
2 years and under 3 years ..	173	96	77	30	25	60	47	6	5	..	..	..	..	..	..
3 years and under 4 years ..	107	46	61	12	15	33	42	1	1	..	2	..	..	..	1
4 years and under 5 years ..	78	37	41	14	6	21	29	2	6	..	..	..	..	..	..
5 — 9 years	203	113	90	20	17	84	68	9	5	..	..	..	..	..	..
10 — 14 years	128	66	62	12	9	51	46	3	6	..	..	..	..	..	1
15 — 19 years	115	70	45	14	6	53	38	1	1	..	..	1	..	1	..
20 — 24 years	164	93	71	16	19	65	46	9	5	2	1	1	..	..	..
25 — 29 years	149	92	57	8	15	73	36	10	5	..	..	..	..	1	1
30 — 34 years	200	109	91	16	20	75	59	14	10	2	1	..	..	2	1
35 — 39 years	241	153	88	16	21	106	56	27	8	..	1	1	1	3	1
40 — 44 years	342	223	119	31	18	138	87	49	10	1	..	2	3	2	1
45 — 49 years	535	351	184	42	26	244	147	61	9	2	2	1	..	1	..
50 — 54 years	794	533	261	42	46	407	190	71	20	4	1	6	1	3	3
55 — 59 years	894	613	281	56	35	486	231	60	8	3	4	3	1	5	2
60 — 64 years	1,095	743	352	74	54	603	271	48	17	4	7	7	..	7	3
65 — 69 years	862	560	302	46	30	474	259	31	4	3	7	..	..	6	2
70 — 74 years	815	432	383	39	32	353	331	21	10	8	4	7	1	4	5
75 — 79 years	535	233	302	18	13	189	278	13	2	9	7	1	..	3	2
80 — 84 years	367	124	243	13	28	104	205	3	6	2	2	1	1	1	1
85 years and over	247	66	181	20	19	40	149	5	6	..	4	1	..	..	3
Unknown	20	17	3	1	..	9	2	4	..	1	..	..	..	2	1
Total ..	10,178	6,004	4,174	894	746	4,442	3,126	540	210	50	48	33	9	45	35

Figures exclude non-locally domiciled Services personnel and their families.
The racial group 'Malays' includes Indonesians.

Table 12

DEATHS REGISTERED IN 1962

BY REGISTRATION AREA, SEX AND AGE GROUP

Age Group	Total			City Area			Rural Area		
	M. & F.	M.	F.	M. & F.	M.	F.	M. & F.	M.	F.
Under 1 day	238	137	101	217	123	94	21	14	7
1 day and under 2 days ..	213	137	76	207	132	75	6	5	1
2 days and under 3 days ..	145	92	53	141	89	52	4	3	1
3 days and under 4 days ..	101	62	39	96	59	37	5	3	2
4 days and under 5 days ..	71	40	31	68	39	29	3	1	2
5 days and under 6 days ..	54	37	17	53	36	17	1	1	..
6 days and under 7 days ..	31	16	15	28	15	13	3	1	2
7 days and under 14 days ..	148	98	50	135	89	46	13	9	4
14 days and under 21 days ..	78	47	31	71	43	28	7	4	3
21 days and under 28 days ..	48	27	21	43	25	18	5	2	3
Neo-Natal Deaths	1,127	693	434	1,059	650	409	68	43	25
28 days and under 2 months ..	128	69	59	92	47	45	36	22	14
2 months and under 3 months ..	100	65	35	78	50	28	22	15	7
3 months and under 4 months ..	66	39	27	49	29	20	17	10	7
4 months and under 5 months ..	60	29	31	41	20	21	19	9	10
5 months and under 6 months ..	61	29	32	50	23	27	11	6	5
6 months and under 7 months ..	63	42	21	47	32	15	16	10	6
7 months and under 8 months ..	44	33	11	24	20	4	20	13	7
8 months and under 9 months ..	59	27	32	43	18	25	16	9	7
9 months and under 10 months ..	52	27	25	42	22	20	10	5	5
10 months and under 11 months ..	42	28	14	26	19	7	16	9	7
11 months and under 1 year ..	41	22	19	33	16	17	8	6	2
Infant Deaths*	1,843	1,103	740	1,584	946	638	259	157	102

* Includes neo-natal deaths.
Figures exclude non-locally domiciled Services personnel and their families

Table 12—*continued*

DEATHS REGISTERED IN 1962

BY REGISTRATION AREA, SEX AND AGE GROUP

Age Group	Total			City Area			Rural Area		
	M. & F.	M.	F.	M. & F.	M.	F.	M. & F.	M.	F.
Under 1 year	1,843	1,103	740	1,584	946	638	259	157	102
1 year and under 2 years	271	131	140	197	98	99	74	33	41
2 years and under 3 years ..	173	96	77	134	78	56	39	18	21
3 years and under 4 years ..	107	46	61	83	38	45	24	8	16
4 years and under 5 years ..	78	37	41	63	28	35	15	9	6
5 — 9 years	203	113	90	166	95	71	37	18	19
10 — 14 years	128	66	62	115	60	55	13	6	7
15 — 19 years	115	70	45	103	62	41	12	8	4
20 — 24 years	164	93	71	146	84	62	18	9	9
25 — 29 years	149	92	57	129	85	44	20	7	13
30 — 34 years	200	109	91	170	92	78	30	17	13
35 — 39 years	241	153	88	216	140	76	25	13	12
40 — 44 years	342	223	119	300	199	101	42	24	18
45 — 49 years	535	351	184	462	303	159	73	48	25
50 — 54 years	794	533	261	647	443	204	147	90	57
55 — 59 years	894	613	281	745	514	231	149	99	50
60 — 64 years	1,095	743	352	879	607	272	216	136	80
65 — 69 years	862	560	302	679	439	240	183	121	62
70 — 74 years	815	432	383	607	319	288	208	113	95
75 — 79 years	535	233	302	391	168	223	144	65	79
80 — 84 years	367	124	243	262	82	180	105	42	63
85 years and over	247	66	181	166	48	118	81	18	63
Unknown	20	17	3	20	17	3	..	..	..
Total ..	10,178	6,004	4,174	8,264	4,945	3,319	1,914	1,059	855

Figures exclude non-locally domiciled Services personnel and their families.

Table 13

LIVE-BIRTHS AND CRUDE BIRTH RATES

Racial Group	1931		1947		1957		1958		1959		1960		1961		1962	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Malays	2,862	43.7	5,473	48.1	9,317	47.3	10,005	48.3	10,463	48.1	10,577	46.5	10,990	46.5	11,257	46.2
Chinese	15,993	37.9	33,629	46.1	46,263	42.4	46,189	40.5	45,799	38.5	44,964	36.5	43,060	33.9	41,934	32.2
Indians and Pakistanis ..	1,020	19.6	3,087	44.8	5,020	40.5	5,116	39.5	5,073	37.7	5,084	36.9	4,759	33.6	4,649	32.4
Eurasians	199	28.5	359	39.4	360	31.6	362	30.9	341	28.3	362	29.7	362	28.3	361	26.4
Europeans	169	20.6	312	8.9	355	32.8	338	29.8	286	23.4	318	25.0	285	21.3	293	20.5
Others	227	29.1	185	24.6	442	36.8	485	39.5	502	37.6	470	35.1	474	33.6	483	31.8
Total ..	20,470	36.4	43,045	45.9	61,757	42.7	62,495	41.3	62,464	39.5	61,775	37.8	59,930	35.5	58,977	34.0
Males	10,753		22,152		31,795		32,180		32,061		31,990		30,791		30,387	
Females	9,717		20,893		29,957		30,313		30,403		29,785		29,138		28,589	
Total ..	20,470		43,045		61,757*		62,495*		62,464		61,775		59,930*		58,977*	
Male births per 100 births ..		52.5		51.5		51.5		51.5		51.3		51.8		51.4		51.5

* Includes unknown sex.

The racial group 'Malays' includes Indonesians.

Figures for 1957 – 1962 exclude live-births of wives of non-locally domiciled Services Personnel.

Table 14

DEATHS AND CRUDE DEATH RATES

Racial Group	1931		1947		1957		1958		1959		1960		1961		1962	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Malays	1,905	29.1	2,029	17.8	1,967	10.0	1,931	9.3	1,790	8.2	1,758	7.7	1,800	7.6	1,640	6.7
Chinese	10,599	25.1	9,368	12.8	7,696	7.1	7,613	6.7	7,431	6.2	7,469	6.1	7,333	5.8	7,568	5.8
Indians and Pakistanis ..	820	15.8	878	12.7	791	6.4	792	6.1	757	5.6	769	5.6	709	5.0	750	5.2
Eurasians	103	14.8	84	9.2	75	6.6	87	7.4	71	5.9	74	6.1	66	5.2	98	7.2
Europeans	51	6.2	74	2.1	38	3.5	65	5.7	42	3.4	58	4.6	31	2.3	42	2.9
Others	145	18.6	78	10.4	80	6.7	88	7.2	84	6.3	82	6.1	88	6.2	80	5.3
Total ..	13,623	24.2	12,511	13.3	10,647	7.4	10,576	7.0	10,175	6.4	10,210	6.2	10,027	5.9	10,178	5.9

The racial group 'Malays' includes Indonesians.
Figures for 1957 – 1962 exclude deaths of non-locally domiciled Services Personnel and their families.

Table 15

INFANT DEATHS AND INFANT MORTALITY RATES, 1962

Racial Group	Number	Rate
Malays	540	48.0
Chinese	1,142	27.2
Indians and Pakistanis	138	29.7
Eurasians	13	36.0
Europeans	1	3.4
Others	9	18.6
Total	1,843	31.2

The racial group 'Malays' includes Indonesians.

Figures exclude deaths of children under one year of non-locally domiciled Services personnel.

Table 16

STILL-BIRTHS AND STILL-BIRTH RATES

Year	Still-Births	Still-Birth Rate	Year	Still-Births	Still-Birth Rate	Year	Still-Births	Still-Birth Rate
1931	568	27.0	1942	467	16.6	1953	925	16.7
1932	528	24.8	1943	599	18.8	1954	932	16.1
1933	527	23.9	1944	610	18.9	1955	904	15.4
1934	586	25.1	1945	459	18.4	1956	909	14.7
1935	650	24.5	1946	645	16.4	1957	968	15.4
1936	693	24.1	1947	671	15.3	1958	965	15.2
1937	755	24.7	1948	753	16.7	1959	862	13.6
1938	783	24.0	1949	803	17.1	1960	886	14.1
1939	814	23.0	1950	807	17.1	1961	766	12.6
1940	719	20.8	1951	802	16.4	1962	740	12.4
1941	816	23.2	1952	901	17.3			

Figures for 1957 – 1962 exclude still-births of wives of non-locally domiciled Services personnel.

Table 17

MATERNAL DEATHS AND MATERNAL MORTALITY RATES

Year	Maternal Deaths	Maternal Mortality Rate	Year	Maternal Deaths	Maternal Mortality Rate	Year	Maternal Deaths	Maternal Mortality Rate
1931 ..	158	7.5	1942	160	5.7	1953	68	1.2
1932 ..	160	7.5	1943	139	4.4	1954	88	1.5
1933 ..	128	5.8	1944	131	4.1	1955	52	0.9
1934 ..	111	4.8	1945	179	7.2	1956	45	0.7
1935 ..	100	3.8	1946	128	3.3	1957	55	0.9
1936 ..	103	3.6	1947	125	2.9	1958	50	0.8
1937 ..	134	4.4	1948	108	2.4	1959	45	0.7
1938 ..	154	4.7	1949	102	2.2	1960	28	0.4
1939 ..	140	4.0	1950	86	1.8	1961	24	0.4
1940 ..	148	4.3	1951	80	1.6	1962	23	0.4
1941 ..	146	4.1	1952	87	1.7			

Figures for 1957 – 1962 exclude deaths of wives of non-locally domiciled Service personnel.

Table 18

MIGRATION STATISTICS BY SEA AND AIR DURING 1962

(*a*) ARRIVALS

Racial Group	ADULTS		CHILDREN*		Total
	Males	Females	Males	Females	
Malays	13,726	5,093	1,020	792	20,631
Chinese	24,677	11,173	1,231	754	37,835
Indians and Pakistanis ..	13,748	3,937	1,556	1,093	20,334
Eurasians	290	173	41	40	544
Europeans	45,232	25,271	3,751	2,598	76,852
Others	10,450	1,815	392	262	12,919
Total ..	108,123	47,462	7,991	5,539	169,115

* Under 12 years of age.

(*b*) DEPARTURES

Racial Group	ADULTS		CHILDREN*		Total
	Males	Females	Males	Females	
Malays	13,355	4,897	1,009	660	19,921
Chinese	25,749	12,328	1,269	798	40,144
Indians and Pakistanis ..	25,704	4,711	2,362	1,897	34,674
Eurasians	336	153	25	16	530
Europeans	46,059	26,623	4,767	3,103	80,552
Others	9,669	1,519	353	265	11,806
Total ..	120,872	50,231	9,785	6,739	187,627

* Under 12 years of age.

The racial group 'Malays' includes Indonesians.

PART II

THE HEALTH DIVISION

Chapter Four

INTRODUCTION

The State of Singapore is comprised of the main island of Singapore with several small surrounding islands within its territorial waters. The main island is 27 miles long and 14 miles wide with a land area of 216 square miles. The area of the smaller surrounding islands is about 10 square miles.

Up to 1959, for administrative purposes, the island was divided up into a densely populated city area of 31 square miles and a larger and relatively sparsely populated rural area. The health services were up to that time carried on by two local authorities, namely the Rural Board and the City Council; and by the Government Health Department under the direction of the Director of Medical Services. The City Health Department was responsible for all the environmental and some personal health services in the City area, while the rest of the personal health services and the environmental health service in the Rural area were carried on by the Government Health Department and the Rural Board respectively.

In late 1959, Government enunciated a policy of expansion of its preventive health services and this included the integration of the Local Authority Health departments into the structure of the Ministry of Health. The first phase of physical integration of the City Council and Rural Board Health Department took place in 1960; the second phase of financial integration was effected in 1961.

At the end of 1961, full operational integration resulted from the re-organisation of the Ministry of Health and the formation of the Public Health Division under the charge of Deputy Director of Medical Services (Health).

The Public Health Division is responsible for preventive health services and this includes:

(1) environmental health;
(2) quarantine and epidemiology;
(3) School Health Service;
(4) Maternal and Child Health services;
(5) training and health education;
(6) markets and hawkers;
(7) other services under Public Health Headquarters Administration.

THE ENVIRONMENTAL HEALTH SERVICES

These services maintain effective control of:

(1) general hygiene and sanitation;
(2) food hygiene and control of sale of food and drugs;
(3) anti-malarial and anti-mosquito control;
(4) health inspection and control of nuisances;
(5) public cleansing and conservancy.

The main feature of the work done during the year was the maintenance of the existing health services at their previous high level and further extensions of these services to meet the rapid increase of population. In the rural areas, rapid development is taking place, in the form of housing estates and consequently these estates now house large population so that the higher urban standards are, of necessity, being enforced in such developing areas. Routine work carried out by these services includes the inspection of places where food is prepared and sold, premises used for offensive trades, house inspections, investigation of nuisances, inspection of licensed premises on behalf of various Government departments and the control of infectious diseases.

THE EPIDEMIOLOGICAL AND QUARANTINE SERVICES

This Branch created in November 1962 with re-organisation is now under the charge of a senior health officer.

The functions of the Epidemiological Unit are to keep up-to-date epidemiological information with regard to all notificable infectious diseases. This includes analyses, evaluations and reports on epidemiological data, and this is carried out by the following Sections:

(1) the Plague Prevention Unit;

(2) the Infectious Diseases Investigation and Epidemiological Studies Unit;

(3) Anti-Malarial Surveillance and Aedes Control Unit.

The Quarantine Service is comprised of four closely related sections, namely:

(1) the Marine Port Health Services;

(2) the Airport Health Services;

(3) the Quarantine Station;

(4) the Vaccination Centre.

The services are so organised that an effective barrier against the introduction of disease from neighbouring and other countries is maintained. Large numbers of passengers, ships, crews and air crews pass through Singapore on account of its strategic geographical position, and there is no doubt that the danger of introduction of disease, in particular the dangerous infectious disease, is a very real one. That Singapore has been able to prevent this is due to the untiring efforts of the Quarantine Service. A round-the-clock service was started in June 1961 in the Port Health Section to meet a long standing need of clearing vessels arriving during the night.

During the year, there was no outbreak of any quarantinable disease. An epidemic of cholera broke out in Hong Kong in August and a food ban was imposed on fresh foodstuff coming into Singapore from Hong Kong.

MATERNAL AND CHILD HEALTH SERVICES

These services, with integration, are now carried out on an island-wide basis. The service operates a network of major clinics, visiting centres and midwife stations throughout the City and Rural areas. A main clinic was opened in October at Kranji and there are now 21 main clinics in the Rural areas and 7 in the City. In addition, there are 23 visiting centres and 8 village midwife centres. The service to mothers consists of:

(1) ante-natal and post-natal care;

(2) a domiciliary midwifery service; and

(3) a domiciliary after-care service.

The facilities made available for infant care have now been extended to children up to the school-going age. The services provided are of a combined nature, including both preventive and curative work. A comprehensive immunisation programme is offered to all children. This includes vaccination against small-pox, immunisation against diphtheria, whooping cough and tetanus and B.C.G. vaccination. This year a Poliomyelitis Immunisation Campaign was implemented and poliomyelitis immunisation will become part of the routine immunisation programme in 1963. The immunisation programme is carried on at all the clinics, as well as by mobile teams which serve the more outlying areas. The Child Health Service includes home visiting and advice to mothers on infant and child care, and though many of the mothers attend clinics for treatment, the preventive side of the Service is stressed throughout.

There has been a progressive increase in the number of both expectant mothers and children attending Maternal and Child Health clinics and this reflects an increased health awareness on the part of the public.

The following table shows the attendance at Maternal and Child Health clinics in specified categories for 1960, 1961 and 1962:

Table 19

	1960	1961	1962
Infants	406,000	395,722	427,237*
Toddlers	227,000	271,548	733,216*
Ante-Natal Visits	133,567	140,013	151,308
Post-Natal Visits	4,491	4,574	4,261
B.C.G.	11,593	11,459	12,186
Vaccination against Smallpox	49,201	45,485	43,333
Immunisation against Diphtheria (completed)	39,772	37,658	58,495
Polio Immunisation	—	—	228,195† 208,343‡

*Includes attendances for poliomyelitis vaccination and for compulsory diphtheria immunisation.

†1st dose.

‡2nd dose.

THE SCHOOL HEALTH SERVICE

The School Health Service is centrally administered in Singapore from the Institute of Health. The service is responsible for the prevention of diseases and the promotion and maintenance of health among school children. There is a total school-going population of 401,587 representing one-quarter of the total population of Singapore. In 1962, 132,392 pupils were examined, representing 33 per cent of the school population. A total of 494 Government and Government-aided schools and a total of 72 private schools were visited by a health officer during the year. During the year five new schools were opened. There are four school clinics, viz. at the Institute of Health, Paya Lebar, Kallang and Bukit Timah. These clinics deal with follow-ups from the routine school examination. There are also travelling dispensaries which visit school children in the more remote Rural areas.

HEALTH EDUCATION, TRAINING AND SPECIAL ASSIGNMENTS

This Branch created with re-organisation in November 1961 is now under the charge of a senior health officer.

The Branch consists of three Units:

(1) Training;
(2) Health Education;
(3) Special Assignments.

Training.—Training of Public Health inspectors is carried out at the Institute of Health and is one of the oldest courses of training in Singapore having been started in 1921. The nine-month course leads to the Diploma of the Royal Society of Health. During the year nine students obtained the Diploma on completion of training.

Training of Public Health nurses was started in November 1957 under the direction of the W.H.O. Public Health Nurse Tutor. This course of one year's duration leads to the Health Visitors Certificate also of the Royal Society of Health. During the year 14 students obtained the Health Visitors Certificate on completion of training.

Health Education.—The activities of this Unit of the Branch have increased considerably this year. With the appointment of a Senior Health Officer in charge of the Branch, several major projects have been planned. Of considerable importance is the introduction of health education first into primary schools and later to be extended to secondary schools. This is an enormous assignment, considering that it has to be implemented in all schools of four-language streams. The scheme is being implemented with the co-operation of the Ministry of Education.

Special Assignments.—This Section maintains liaison with other international organisations connected with public health, deals with public health legislation, and is responsible for preparation of health reports. The section is not fully developed, due mainly to a shortage of staff.

MARKETS AND HAWKERS BRANCH

This Unit is under the control of the Superintendent, Markets and Hawkers Branch and deals with the licensing and control of hawkers, and the supervision and licensing of markets.

The Markets and Hawkers Department discharge their functions in two separate Sections:

(*a*) the Markets Section;
(*b*) the Hawkers Section.

The work of this Branch is co-ordinated by an *ad hoc* committee which implements Government's hawkers policy.

OTHER SERVICES UNDER PUBLIC HEALTH HEADQUARTERS ADMINISTRATION

Under these services are included:

(1) the Public Health Engineering Unit;
(2) Cemeteries and Crematoria Unit;
(3) Labour and Welfare Unit;
(4) the Transport Centre.

MAJOR EVENTS OF PUBLIC HEALTH SIGNIFICANCE

Jurong Industrial Site

The work started in the end of 1961 on this 18,000 acres of land for industrial development, and continued with an increased tempo during 1962 when a great portion of the site was levelled and laid out. This work was carried out on a 24-hour basis with the use of modern earth removing machinery. Anti-malarial measures were maintained throughout the year. Nineteen mosquito surveys were made. There were 35 collections of A. sundaicus and three collections of A. letifer. Other facilities such as main drains, main telephone communication and road approach were completed during the year.

Construction on a catchment for water for the proposed Jurong satellite town was also commenced, and oiling from the bank was carried out weekly.

Poliomyelitis Immunisation Campaign

In March, the Public Health Division launched a Poliomyelitis Immunisation Campaign, which aimed to immunise 300,000 vulnerable children from the ages of 6 months to 6 years. The problem of the disease is such that epidemics of a varying proportion are experienced approximately every two years. This campaign was timed to prevent the expected rise in cases toward the end of the year. The operation was brought to a successful close in November 1962, after protecting 76 per cent of the vulnerable children.

Trivalent polio vaccine was used; the vaccine being prepared and stored in the Department of Bacteriology, University of Singapore. The vaccine was administered at all Maternal and Child Health clinics and taken to the population in outlying districts by mobile teams operating both in the rural and city areas.

Compulsory Diphtheria Immunisation

On 30th March, 1962 by *Gazette* Notification No. S 62 the Compulsory Diphtheria Immunisation Ordinance came into force. This Ordinance provides for compulsory primary immunisation against diphtheria for every child —

- (*a*) within 12 months of birth; or
- (*b*) who is under 7 years of age and who has not been previously immunised against diphtheria.

It also provides for booster immunisation for every child —

- (*a*) upon attaining the age of 4 years, or 36–42 months after primary immunisation;
- (*b*) within 12 months of entering primary school.

Special Course in Health Education for Primary School Teachers

This course formed phase II of a five phased programme to introduce health education into primary schools on a formal basis. Some 35 trained teachers from 15 primary schools of the 4-language streams attended a course on health education aimed to give them factual knowledge on health subjects which can be taught in primary schools.

Table 20

VITAL STATISTICS IN THE STATE OF SINGAPORE FOR THE PAST 5 YEARS

	1958		1959		1960		1961		1962	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Live Births	62,495	41.3*	62,464	39.5	61,775	37.8	59,930	35.5	58,977	34.0
Still Births	965	15.2†	862	13.6	886	14.1	766	12.6	740	12.4
Perinatal deaths	1,839	29.0‡	1,666	26.3	1,747	27.9	1,593	26.2	1,593	26.7
Neonatal deaths	1,186	19.0§	1,080	17.3	1,093	17.7	1,059	17.7	1,127	19.1
Infant deaths (birth — 1 year) ...	2,733	43.7‖	2,249	36.0	2,158	34.9	1,937	32.3	1,843	31.2
Maternal deaths	50	0.8¶	45	0.7	28	0.4	24	0.39	23	0.4

* The crude birth rate = Number of live births/1,000 mid-year population.

† The still birth rate = Number of still births/1,000 still and live births.

‡ The perinatal mortality rate = Number of deaths under 7 days of age plus still births/1,000 still and live births.

§ The neonatal mortality rate = Number of deaths under 28 days of age/1,000 live births.

‖ The infant mortality rate = Number of deaths under 1 year of age/1,000 live births.

¶ The maternal mortality rate = Number of maternal deaths per deaths per 1,000 total live and still births.

These figures have been obtained from the 1960 Report on the Registration of Births and Deaths, Marriages and Persons, and from the *Monthly Demographic Bulletins* for the State of Singapore for 1961, 1962 and 1963.

Table 21

INFANT MORTALITY RATE BY ETHNIC GROUPS IN SINGAPORE FOR 1960, 1961 AND 1962

	1960	1961	1962
	Infant Mortality Rate	Infant Mortality Rate	Infant Mortality Rate
All Races	34.9	32.3	31.2
Malaysians	65.0	56.8	48.0
Chinese	28.3	26.3	27.2
Indians	33.4	33.4	29.7
Eurasians	13.8	16.6	36.0
Europeans	25.2	24.6	3.4
Others	29.8	21.1	18.6

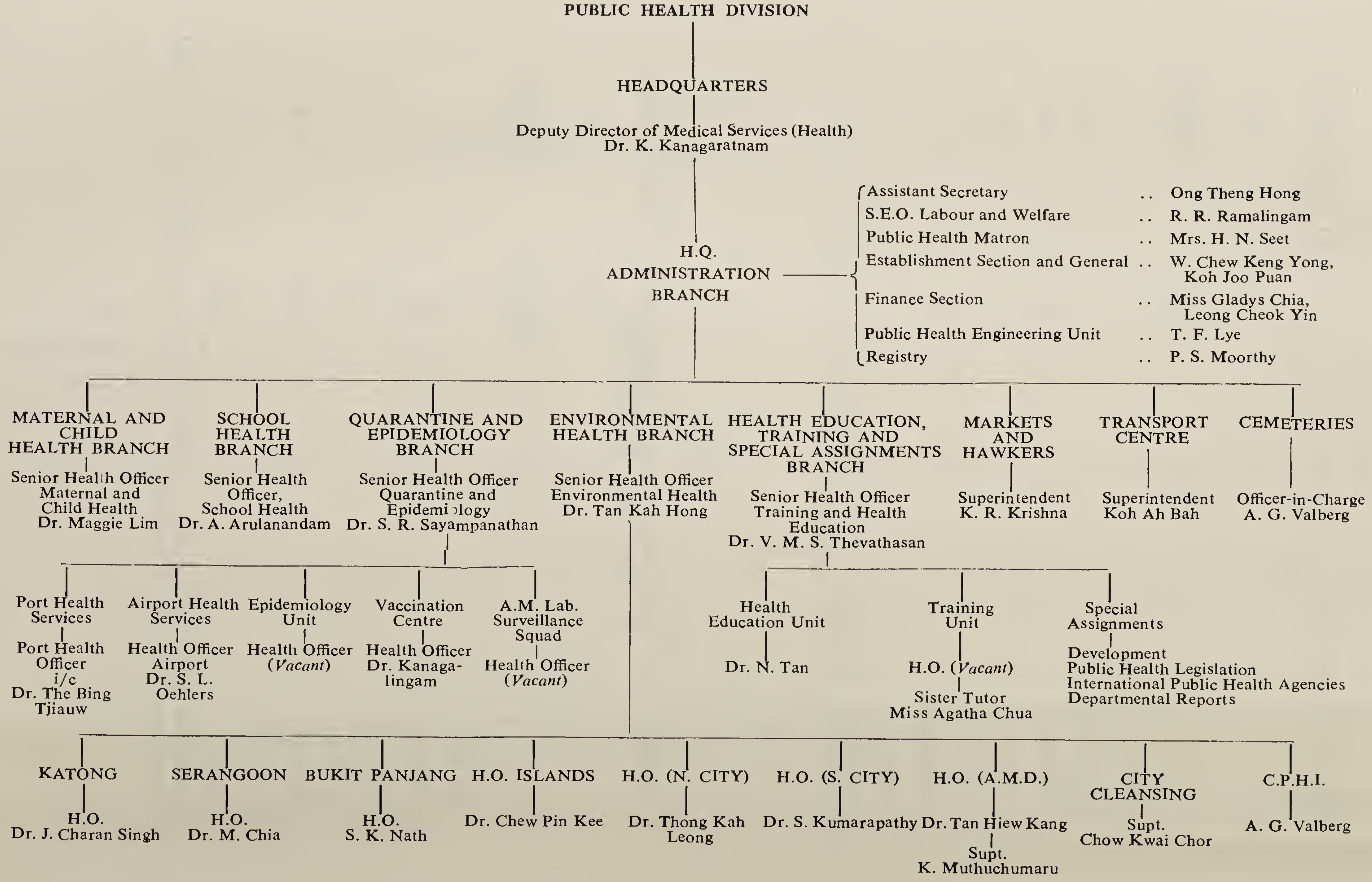
These figures have been obtained from the *Monthly Demographic Bulletin* issued by the Department of Statistics, Singapore.

Table 22

PERINATAL MORTALITY RATE BY ETHNIC GROUPS IN SINGAPORE FOR 1960, 1961 AND 1962

	1960	1961	1962
	Perinatal Mortality Rate	Perinatal Mortality Rate	Perinatal Mortality Rate
All Races	27.9	26.2	26.7
Malaysians	35.3	36.3	31.9
Chinese	25.9	22.6	24.7
Indians	30.8	36.0	32.5
Eurasians	11.0	24.5	27.5
Europeans	25.0	27.7	6.8
Others	35.3	22.8	26.5

These figures have been obtained from the *Monthly Demographic Bulletin* issued by the Department of Statistics, Singapore.



- PUBLIC HEALTH DIVISION
  - HEADQUARTERS
    - Deputy Director of Medical Services (Health) Dr. K. Kanagaratnam
      - H.Q. ADMINISTRATION BRANCH
        - Assistant Secretary .. Ong Theng Hong
        - S.E.O. Labour and Welfare .. R. R. Ramalingam
        - Public Health Matron .. Mrs. H. N. Seet
        - Establishment Section and General .. W. Chew Keng Yong, Koh Joo Puan
        - Finance Section .. Miss Gladys Chia, Leong Cheok Yin
        - Public Health Engineering Unit .. T. F. Lye
        - Registry .. P. S. Moorthy
      - MATERNAL AND CHILD HEALTH BRANCH
        - Senior Health Officer Maternal and Child Health Dr. Maggie Lim
      - SCHOOL HEALTH BRANCH
        - Senior Health Officer, School Health Dr. A. Arulanandam
      - QUARANTINE AND EPIDEMIOLOGY BRANCH
        - Senior Health Officer Quarantine and Epidemiology Dr. S. R. Sayampanathan
          - Port Health Services
            - Port Health Officer i/c Dr. The Bing Tjiauw
          - Airport Health Services
            - Health Officer Airport Dr. S. L. Oehlers
          - Epidemiology Unit
            - Health Officer (*Vacant*)
          - Vaccination Centre
            - Health Officer Dr. Kanagalingam
          - A.M. Lab. Surveillance Squad
            - Health Officer (*Vacant*)
      - ENVIRONMENTAL HEALTH BRANCH
        - Senior Health Officer Environmental Health Dr. Tan Kah Hong
          - KATONG
            - H.O. Dr. J. Charan Singh
          - SERANGOON
            - H.O. Dr. M. Chia
          - BUKIT PANJANG
            - H.O. S. K. Nath
          - H.O. ISLANDS
            - Dr. Chew Pin Kee
          - H.O. (N. CITY)
            - Dr. Thong Kah Leong
          - H.O. (S. CITY)
            - Dr. S. Kumarapathy
          - H.O. (A.M.D.)
            - Dr. Tan Hiew Kang
              - Supt. K. Muthuchumaru
          - CITY CLEANSING
            - Supt. Chow Kwai Chor
          - C.P.H.I.
            - A. G. Valberg
      - HEALTH EDUCATION, TRAINING AND SPECIAL ASSIGNMENTS BRANCH
        - Senior Health Officer Training and Health Education Dr. V. M. S. Thevathasan
          - Health Education Unit
            - Dr. N. Tan
          - Training Unit
            - H.O. (*Vacant*)
              - Sister Tutor Miss Agatha Chua
          - Special Assignments
            - Development
            - Public Health Legislation
            - International Public Health Agencies
            - Departmental Reports
      - MARKETS AND HAWKERS
        - Superintendent K. R. Krishna
      - TRANSPORT CENTRE
        - Superintendent Koh Ah Bah
      - CEMETERIES
        - Officer-in-Charge A. G. Valberg

Chapter Five

THE ENVIRONMENTAL HEALTH SERVICES

THE ENVIRONMENTAL HEALTH BRANCH

THE functions of this Branch cover a large part of the public health services maintaining effective control over —

(1) general hygiene and sanitation;

(2) food hygiene and the control of the sale of food and drugs;

(3) anti-malarial control and mosquito control.

These functions are carried out on a regional basis by public health teams which include a total inspectorate of 122 of which 65 belong to the Public Health Inspectorate, 51 are concerned with cleansing services and 6 Food and Drugs, under the supervision of Health officers in charge of the various districts. The overall control of these services is maintained by the Senior Health Officer (Environmental Health). For administrative purposes, there are six districts namely, Katong, Bukit Panjang/Jurong, Serangoon, the Southern Islands, City (North) and City (South) each under a District Health Officer. The Public Health Inspectorate is headed by the Chief Public Health Inspector. The main functions of the inspectorate are again on a district basis, with a Senior Public Health Inspector in charge; control of sale of food and drugs is under the Chief Food and Drugs Inspector and the Anti-Mosquito Department is under the supervision of the Superintendent of Anti-Mosquito Department; all of them work under the direction of health officers responsible for these subjects.

GENERAL HYGIENE AND SANITATION

This includes (*a*) general sanitation; (*b*) water supplies; (*c*) offensive and dangerous trades; (*d*) the cleansing services; (*e*) kampong sanitation.

General Sanitation

General sanitation is the main function of the Public Health Inspectorate. The Public Health Inspectorate inspects all premises licensed by the Environmental Health Branch to make sure that proper health standards are maintained. In addition, all unlicensed premises are checked by the inspectorate, and if necessary, Court action is taken. Further, numerous complaints which are received from members of the public are investigated to establish whether they are genuine and then action is instituted as and when necessary. These include mosquito and fly nuisances, chokage of drains, smoke and smell nuisances and nuisances created by factories and industrial premises.

During the year the Housing and Development Board completed 12,230 housing units and many of the premises came under the purview of this Branch in that many of these premises were licensed as coffee shops, eating houses and restaurants. In the rural areas building activity also increased tremendously.

In connection with building and planning this Branch inspected and checked over 498 plans, layouts and permits, stating requirements and giving comments from the health point of view. In connection with the government industrial development policy, a committee of the Economic Development Board, the Trade Waste and Industrial Effluents Committee was formed. A sub-committee of this Committee (the Trade Waste Sub-Committee) was formed with the task of formulating standards for industrial effluents. The Public Health Division is represented on this sub-committee.

Piped Water

The source of water supply for use by the population throughout the Island is piped water. During the year extensions to water mains were laid thereby supplying more people with pure water. Stand-pipes continued to be erected and are conveniently situated in kampongs, so that a wholesome and pure water supply for drinking and cooking is available. By the end of 1962 a total of 2,400 stand-pipes had been installed throughout the Island. Water supply to the public through stand-pipes is free to the consumers and was made a public charge costing the Department $1,424,050.

Well Water Supply

This is the main source of water supply in the kampongs and in the more remote areas of the Island. Wells have been constructed in many areas by the Government maintaining health requirements, i.e. with deep wells with aprons with coping cooking and drainage. In areas where drainage has been constructed as an anti-malarial measure, anti-malarial wells provide a relatively safe water supply from subsoil pipes.

Offensive and Dangerous Trades

Offensive and dangerous trades are controlled by licensing under the Municipal Ordinance, Chapter 133, section 211 together with the Rural Board Offensive Trade By-laws. These laws provide for sanitary requirements, adequate lighting, ventilation, drainage, adequate and wholesome water supply, and satisfactory safeguards to meet occupational hazards. In the Rural areas, there are numerous small trades and cottage industries springing up, and to reduce hazards which are bound to occur with primitive methods employed, the Factories Ordinance was passed in 1958. This Ordinance has done much to improve accommodation, conditions of work, medical benefits and other matters pertaining to the Workers' health and safety.

A total of 69,918 premises were inspected during 1962. These include 1,833 houses in the city area in connection with environmental sanitation, while inspection of other premises totalled 45,638. These included visits to factories, sawmills, places of entertainment, markets, licensed and unlicensed premises. In the rural districts a total of 22,447 premises of different categories were inspected.

These inspections are made with the object of putting up recommendations with regard to licensing, registration and renewal of license by other licensing authorities.

The main complaints received during the year were against cattle sheds, piggeries, tanneries and industrial premises creating dust and smell nuisances. Abatement of public nuisance is one of the statutory functions of this Branch. This and unlicensed premises present problems which are in many cases referred to and dealt with by a Licensing Policy Committee set up during the year.

The Cleansing Services

The functions carried on by the Rural Board and the City Cleansing Department have been integrated and are now centrally administered. The City and Rural Cleansing Services function on a district basis. This service includes:

(1) cleansing of public streets and drains daily;

(2) the removal of domestic and trade refuse from premises;

(3) the flushing of main streets and drains;

(4) the disposal of refuse control tipping and incineration;

(5) the supervision of cleansing outlet drains carried out by contract labourers; and

(6) the removal of nightsoil from premises not yet sewered.

Removal of refuse is done daily in the city area from houses and business premises along main roads, public streets and housing estates. Refuse is classified either as domestic or trade refuse. The collection and disposal of domestic refuse is performed with no charge, but owners of trade premises are charged for the service.

In the rural area, the removal of refuse is done daily from domestic houses, business premises along main roads, gazetted streets, and housing estates. A considerable number of kampongs are provided with labourers to maintain a skeleton cleansing service. The standard of cleansing was maintained at a satisfactory level throughout the year, although the cleansing services require further expansion in personnel and mechanised transport to cover numerous housing estates built during the year and to cover the many newly gazetted public streets.

Kampong Sanitation

The scheme of kampong sanitation started in 1954 continued to make progress and a further forty-six kampongs were sanitated during 1962 in conjunction with anti-malarial work. This work was carried out by the Public Health engineer through the Kampong Sanitation Unit. It involved the provision of adequate drainage facilities, latrines and wells, repairs to standpipes. Concrete drains were constructed, and new stand-pipes were put up with concrete aprons.

FOOD HYGIENE AND THE CONTROL OF THE SALE OF FOOD AND DRUGS

This unit is responsible for maintaining food hygiene standards and for the control of the manufacture, storage, preparation and sale of food and drugs exercised under the Food and Drugs Ordinance (Chapter 148) and the regulations made under the Ordinance. Samples of food and drugs are taken regularly and prosecutions instituted where necessary. The samples are analysed for quality and must comply with standards laid down in the Ordinance.

With the integration of the City Health Branch into the Ministry of Health, food sampling continues to be carried out by the Food and Drugs section on an island-wide basis. It is now the aim of the Public Health Division to raise the standards of food establishments in the rural areas to the same level as those of the city.

In 1962, 1,912 samples of food, drugs and other specimens were taken for analyses and other examinations by the Food and Drugs Inspectorate in both the city and rural areas. A summary of this is shown in the table below:

Table 23

SUMMARY OF SAMPLES TAKEN DURING 1962

——	To Analyst	To Toxicologist	To Bacteriologist	To University of Singapore	To Botanic Gardens	To National Museum	Total
Food	1,442	..	10	..	..	..	1,432
Drugs	249	..	..	..	..	..	249
For Labelling ..	2	..	..	..	..	..	2
Re Food Poisoning ..	..	4	71	..	4	..	79
Re Food Contamination ..	12	..	..	135	..	..	147
For Identification ..	..	..	..	..	1	2	3
Total ..	1,685	4	81	135	5	2	1,912

During the year 138,583 lb. of unsound food were destroyed as unfit for human consumption. A total of 1,597 food establishments in the city area and another 787 premises in the rural area were inspected in connection with the preparation, storage, manufacture and sale of food. The total number of food establishments licensed in the city and rural areas during the year is given below:

Table 24

FOOD ESTABLISHMENTS LICENSED IN THE CITY AND RURAL AREAS DURING 1962

——	City	DISTRICT COUNCILS			Total
		Serangoon	Katong	Bukit Panjang	
Coffee shop	134	12	13	2	161
Eating House	789	225	215	127	1,356
Restaurant	356	..	..	..	356
Others (Food Byelaws) ..	318	91	65	37	511

All food establishments dealing with the preparation, storage and sale of ice-cream and milk were regularly inspected and standards rigidly enforced, in accordance with the Food and Drugs Ordinance. A greater emphasis was placed on the inspection of the larger food establishments and factories. During the year 226 employees of ice-cream factories were sent to Middleton Hospital (the Infectious Diseases Hospital in Singapore) to check as to whether they are typhoid carriers.

About the middle of the year under review, a Licensing Policy Committee was formed, consisting of Assemblymen, representatives of the University of Singapore and this Ministry. This committee is advisory to the Minister and was charged with formulating policies in relation to matters pertaining to licensing carried by the Public Health Division. In addition, all problems pertaining to licensing are directed to this committee for consideration and recommendations.

Food Poisoning.—During the year 42 reports of food poisoning outbreaks affecting 149 persons were investigated. The causative agents in the majority of these food poisoning outbreaks were of bacterial origin. There was only one outbreak of food poisoning due to the infection of mushrooms (Lepiota Morgani) as compared to 12 outbreaks in the previous year. One case of food poisoning was due to the consumption of a wild fruit belonging to the Jatrapha Curcas species.

Radioactivity in milk.—During the latter part of the year, weekly samples of local fresh milk and imported brands of milk were sent to the Department of Physics, University of Singapore, to ascertain the degree of radioactivity that might be present. A total of 200 samples were analysed and the amount of radioactivity present was found to be non-significant.

ANTI-MALARIA CONTROL AND MOSQUITO CONTROL

This important health programme has been carried out by the Government Health Department in the Rural areas and by the City Health Department in the City area. The Services are responsible for control measures within their own areas. The main method adopted has been larval control of the two most important vectors, Anophelene maculatus and Anophelene sundaicus. This entails the laying of sub-soil pipes, construction of permanent surface drains, digging of ditches and the use of anti-malarial oil and insecticide. A constant vigil is kept on the prevention of malaria, and though Singapore has been virtually free from indigenous malaria for the past ten years, there has been no room for complacency and the anti-malarial programme is adhered to rigidly.

Although integrated, the anti-malaria and anti-mosquito control measures are still largely carried on a city and rural basis, and the District Health Officers are responsible for these services in the Rural area which the Health Officer, Anti-Mosquito Department is responsible for work in the City area.

It has been decided that all new construction work in relation to anti-malaria control should be under the charge of the Public Health engineer.

Close liaison was maintained not only with the armed forces but with Governmental and semi-governmental organisations, like the Malayan Railway Authorities and the Singapore Harbour Board Authorities in relation to the control of malaria.

During the year there were no indigenous cases of malaria. There were 14 imported cases. This is the sixth year that Singapore has been completely free of indigenous malaria.

Throughout the year anti-malaria control was maintained through (1) permanent anti-malaria measures; (2) non permanent anti-malaria measures.

Permanent Anti-Malarial Measures.—These include:

(*a*) construction of permanent concrete drains sub-soil drains and earth drains with the construction of sub-soil drains. A number of anti-malarial wells were constructed providing the population in those areas a safe water supply;

(*b*) maintenance and repair of existing anti-malarial drains. This was done in both rural and city areas;

(*c*) control of tidal areas. This consists of filling of extensive tidal swamp areas by controlled tipping. Large areas in Kolam Ayer and in the Kallang Basin were filled. Where malaria vectors have been discovered in fish and prawn ponds, owners are advised to empty their ponds daily with the tides.

Non-Permanent Measures.—These are mainly:

Larvicidal Measures: A total of 238,763 gallons of anti-malarial mixture was used. Of this 173,902 gallons were used in the rural area, and the remaining 64,771 gallons were used in City area. To ensure that the anti-malarial mixtures are effective and comply with specifications, regular field and laboratory tests were carried out. Apart from routine oiling to control malaria, the Department had to deal with many pest mosquito breeding places. Breeding places are also created through housing and agricultural developments, specially in the Rural area.

Oil mixtures used as larvicides included:

(1) Shell malariol emulsion;
(2) Gammexene powder — used for breeding in septic tanks;
(3) Sheel malariol H.S.;
(4) Anti-malaria mixture with 10 per cent D.D.T.;
(5) Benzine with 10 per cent D.D.T.;
(6) Dieldrex 15;
(7) Kerosene oil.

ANTI-MALARIAL MEASURES AT JURONG INDUSTRIAL SITE

Oiling was introduced in January, following nine mosquito surveys carried out in October and November 1961. There were 13 collections of Anophelene Sundaicus and 2 collections of Anophelene Letifer. Based on these surveys control measures were mapped out to cover:

(*a*) the catchment area of S. Jurong, from the causeway northwards to Jurong Road;

(*b*) the other areas where engineering works are proceeding especially from 16 m.s. Boon Lay Road to Tanjong Kling;

Throughout 1962, 19 mosquito surveys were made. There were 35 collections of A. Sundaicus and 3 collections of A. Letifer.

The anti-malarial team has kept track of all engineering progress which produces seepages, stagnant pools and blocked outlets. These have been covered with a heavy oiling programme.

APPENDIX *A*

Mosquito traps set in the following areas with the results indicated below:

Locality	No. of Nights	*A. mac.*	*A. sund.*	*A. let.*	Other *Anoph.*	Others	Total
Tanjong Rhu ..	74	Nil	Nil	Nil	4	1,221	1,225
Aljunied Road ..	74	Nil	Nil	Nil	13	1,673	1,686
Wimborne Road ..	74	Nil	Nil	Nil	2	1,502	1,504
Soon Wing Road ..	209	Nil	Nil	Nil	44	3,814	3,858
Serangoon Road ..	80	Nil	Nil	Nil	12	1,283	1,295
Kim Keat Road ..	215	Nil	Nil	Nil	562	3,248	3,810
Clyde Terrace ..	135	Nil	Nil	Nil	1	1,862	1,863
Total ..	—	—	—	—	638	14,603	15,241

629 Anopheline females were trapped and there was no collection of any vector species. In addition 14,603 adult mosquitoes were identified. Daily reports on adult catches were forwarded to the O.C. Hygiene and Malaria Control Unit, Singapore Base District, for information as requested.

APPENDIX *B*

1,000 consecutive collections from common breeding places:

Roadside concrete drains	411
Engineer's outlet drains	28
Concrete sullage drains	86
Backlane concrete drains	23
Earth drains	67
Stagnant water	102
Building excavations	35
Hyacinth ponds	43
Vegetable ponds	18
Concrete ponds	4
Earth ponds	12
Fish ponds	3
Grassy pool	23
Sump pits	20
Cess pools	16
Concrete tanks	10
Seepages	6
Lorry track	19
Concrete pit	26
Concrete wells	4
Earth wells	23
Septic tanks	3
Edges of reservoir	21
Water pipes stop cocks	5
Disused kwali	1
Disused Tyres	10
Disused Drums	10
Disused Boats	3
Disused Tins	9
Disused Jars	15
Total:	1,000

APPENDIX *C*

16,019 collections of mosquito larvae were brought to the laboratory for identification. 5 of them contained larvae of *Anopheline sundaicus,* 10 contained larvae of *Anophelene maculatus* and 8 contained larvae of *Anophelene letifer*. The other 15,996 collections did not contain larvae of malaria vectors.

The types of breeding places in which the larvae of malaria vectors were found were as follows:

A. sundacus

Concrete tank	2
Building excavation	1
Earth pool	1
Concrete pond	1
Total	5

A. maculatus

Earth well	9
Concrete tank	1
Total	10

A. letifer

Edges of creecks in Reservoir	8

Chapter Six

QUARANTINE AND EPIDEMIOLOGICAL SERVICES

THIS Branch came into being in November 1961 under the charge of a senior health officer.

The Quarantine Section comprises of:

(1) the Marine Port Health Service;
(2) the Airport Health Service;
(3) the Quarantine Station; and
(4) the Vaccination Centre.

These four sections work in liaison with each other so that Singapore is kept free from the introduction of dangerous infectious diseases from infected territories. Singapore, in spite of its proximity to infected countries, did not witness any quarantinable disease for the year, and this is due to the unrelenting vigilance maintained by the Quarantine Service.

The Epidemiology Section comprises of:

(1) the Plague Prevention Unit;
(2) Infectious Disease Investigation and Epidemiological Studies Unit;
(3) health service to the Islands; and
(4) the Aedes Control and Anti-Malarial Surveillance Unit, which runs the Central Anti-Malarial Laboratory and also assists in establishing new projects.

THE QUARANTINE SECTION

The Marine Port Health Service

In April 1962, a new launch, the *Subur* was put into commission and has greatly facilitated the round-the-clock health clearance of ships. There are now three launches in the Port Health Service.

The health clearance of small craft arriving from neighbouring islands is now done at the Immigration Depôt at South Quay.

Our round-the-clock radio medical service for ships at sea is still popular. During the year, 91 calls were attended by the Port Health Officer on duty.

The Section dealt with the following:

Table 25

	Number of Vessels		Passengers and Crews	
	1961	1962	1961	1962
Foreign-going vessels	1.524	2,080	117,855	135,307
Small craft	10,141	10,260	69,293	64,581

The Airport Health Service

The International Airport at Paya Lebar is designated a sanitary airport under the terms of Article 19 of the International Sanitary Regulations. During the year, 12 Airlines availed themselves of the facilities provided at the Airport. There were 4,920 scheduled aircraft arrivals and 4,930 departures on international flights. Round-the-clock service for the clearance of aircraft and passengers from "infected airports" has been provided by four senior hospital assistants. Three private operators (S.V.O.C., Shell and Caltex) also availed themselves of the facilities, while B.U.A. and Cunard Eagle Airways ran trooping services.

The general sanitation of the Airport has remained satisfactory throughout the year. The problem of proper disposal of airport waste is being worked out and it is hoped our recommendations will be carried out in 1963.

The volume of traffic and the number of passengers handled by the Airport Health Office over the last five years is given in the table below:

Table 26

	1958	1959	1960	1961	1962
Aircraft from infected Ports ...	2,348	2,188	1,325	1,641	1,917
Passengers and crew cleared ...	94,718	94,874	74,916	91,343	110,852
Passengers isolated ...	—	—	—	—	—
Passengers under surveillance ...	2,882	254	174	354	670

Many travellers came without proper health certificates and the number of passengers placed under surveillance increased during the year.

The Quarantine Station

With stricter immigration control being enforced, there continues to be a marked drop in the number of passengers quarantined at the Quarantine Station at St. John's Island. 6,625 disembarking deck passengers from infected ports were sent to the Quarantine Station and kept under observation for 48 hours.

Below is a table giving the numbers of passengers quarantined at St. John's Island for the past five years:

Table 27

	1958	1959	1960	1961	1962
Chinese ...	7,648	5,735	6,201	5,496	3,427
Indians ...	6,429	5,912	4,016	4,754	3,126
Malaysians ...	323	806	15	302	—
Others ...	21	26	20	63	36
Total ...	14,421	12,479	10,252	10,615	6,625

The Government Vaccination Centre

This centre is the North Canal Road Vaccination Centre for the vaccination and subsequent issue of certificates for passengers and travellers requiring international vaccination certificate for travel purposes.

The following is the summary of the work done at this centre for 1962:

Table 28

Smallpox vaccinations	19,260
Cholera vaccinations	20,973
T.A.B. vaccinations	91

THE EPIDEMIOLOGICAL SECTION

This Section which has been newly created, started operating officially in 1962, and its main function is to co-ordinate all data of an epidemiological nature.

Plague Prevention Unit

This Unit traps rats on either side of the Singapore River and examines them for evidence of plague infection. Ships found to be infested with rats are fumigated with hydrogen cyanide. During the year, 3,577 rats were caught and dissected by this Unit; of this number a total of 2,215 were found flee-infected but no plague bacillus was found on any smears.

The Infectious Disease Investigation and Epidemiological Studies Unit

This Unit collects, studies and analyses returns of infectious diseases, and suggests lines of action in relation to findings.

It is responsible for epidemiological data of international significance being forwarded to International Health Agencies.

Epidemics or any unusual occurrence of infectious diseases are also investigated and controlled through this Unit.

The Notifiable Infectious Diseases

The control of infectious diseases is exercised through the Quarantine and Prevention of Infectious Diseases Ordinance (Chapter 147) and its regulations. Barring a few reservations, the Ministry of Health follows the pattern of the International Sanitary Regulations though not formally a party to their regulations.

Infectious diseases are divided into two broad categories under the Quarantine and Prevention of Infectious Diseases Ordinance:

(1) The dangerous infectious diseases which are quarantinable. These are smallpox, plague, cholera, epidemic or louse borne typhus, yellow fever.

(2) Notifiable infectious diseases. These include anthrax, cerebro spinal fever, chickenpox, diphtheria, enteric fever, erysipelas, leprosy, puerperal fever, scarlet fever, tuberculosis and the five dangerous infectious diseases.

In 1962, Singapore did not witness any dangerous infectious disease despite its proximity to territories in which these diseases are either epidemic or endemic.

Table 29 shows the incidence of the main notifiable diseases for 1961 and 1962.

Table 29

Disease	1961			1962		
	City	Rural	Total	City	Rural	Total
Typhoid ...	89	73	162	65	45	110
Diphtheria ...	461	145	606	261	92	353
Chickenpox ...	1,068	574	1,642	1,372	652	2,024
Poliomyelitis ...	22	35	57	6	8	14
Cerebro spinal fever ...	1	—	1	—	—	—
Leprosy ...	62	39	101	69	43	112
Typhus* ...	1	4	5	—	2	2
Puerperal Fever ...	29	8	37	40	7	47

*Under the heading, typhus are included Tsutsugumushi or Scrub Typhus of Malaya (mite borne) and flea borne Urban Type Tropical Typhus. Louse borne typhus has not been seen in Singapore.

The figures for tuberculosis are not included in this report as tuberculosis (since 1959) is notified directly to the A.D.M.S. (T.B.) at Tan Tock Seng Hospital.

DIPHTHERIA

The incidence of this preventable disease is still high in the country with 353 cases notified during the year against 606 in 1961.

The number of facial cases did not increase. Towards the end of 1962, the monthly incidence (including nasal and aural cases) fell. Diphtheria mortality has been the lowest this year (16) since 1959 (29). Although diphtheria immunisation has been available to the child population since 1948, after 14 years of free immunisation on a voluntary basis, the response is still poor.

To counteract the apathy on the part of the public after 14 years of voluntary immunisation, the Ministry of Health introduced legislation to control diphtheria. Accordingly in March, the Compulsory Diphtheria Immunisation Ordinance and its regulations were brought into operation.

The table below gives the monthly notifications of diphtheria for 1962.

Table 30

DISTRIBUTION OF DIPHTHERIA BY MONTH AND LOCALITY

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	37	23	30	29	23	9	30	15	14	10	15	26	261
Rural ..	4	3	6	7	12	12	4	19	12	5	3	5	92
Total ..	41	26	36	36	35	21	34	34	26	15	18	31	353

Table 31

MONTHLY DIPTHERIA ADMISSIONS FOR 1961 AND 1962

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1961 ..	63	51	43	50	59	41	52	42	53	66	29	57	606
1962 ..	41	26	36	36	35	21	34	34	26	15	18	31	353

Table 32

DIPHTHERIA ADMISSIONS AND DEATHS FOR THE LAST 10 YEARS

Year	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Admissions ..	332	345	460	552	712	548	519	642	587	353
Deaths	47	34	41	47	58	34	23	32	27	13
Mortality Rate ..	14.15	9.86	8.91	8.51	8.14	6.20	4.43	4.98	4.6	3.68

POLIOMYELITIS

This disease which has occurred in epidemic form in Singapore with an approximately two yearly periodicity, showed a dramatic drop in its incidence in 1962, due mainly to a Poliomyelitis Immunisation Campaign which commenced in March 1962. The expected epidemic in late 1962 failed to occur, mainly due to the use of trivalent oral poliomyelitis vaccine, which was fed to 76 per cent of the child population under 6 years of age in Singapore.

During the last six months of the year, there were only two cases, one of which was an imported case.

The table below shows the monthly incidence of poliomyelitis for 1962.

Table 33

Poliomyelitis 1962	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
City ..	1	..	..	1	2	..	..	..	..	..	..	2*	6*
Rural ..	..	3	1	3	..	1	..	..	..	..	..	..	8
Total ..	1	3	1	4	2	1	..	..	..	..	..	2*	14*

* Includes one imported case.

Table 34

INCIDENCE OF NOTIFIED AND CONFIRMED CASES OF POLIOMYELITIS BY AGE, SEX, AND ETHNIC GROUP IN SINGAPORE, 1962

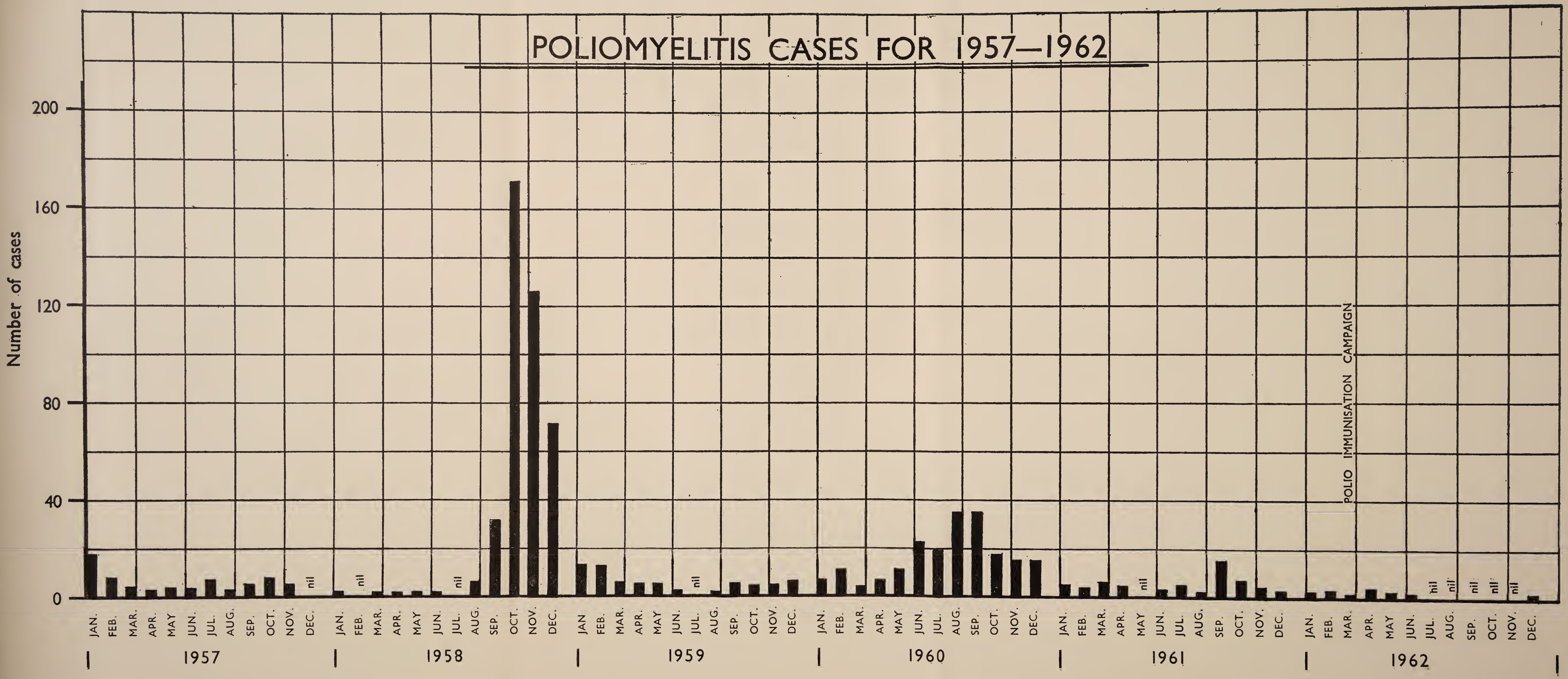
	Under 1 year			1+ year			2+ years			3+ years			4+ years			Total under 5 years			Total over 5 years		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Europeans	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Eurasians	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chinese	1	2	3	2	..	2	..	..	..	..	2	2	..	..	..	3	4	7	2	1	3
Malays	..	..	..	..	..	..	..	..	..	..	..	..	1*	..	1	1*	..	1	..	..	..
Indians	..	..	..	..	1	1	..	..	..	..	..	..	..	1	1	..	2	2	..	1	1
Others	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	1	2	3	2	1	3	..	..	..	..	2	2	1*	1	2	4*	6	10	2	2	4

* One imported case.

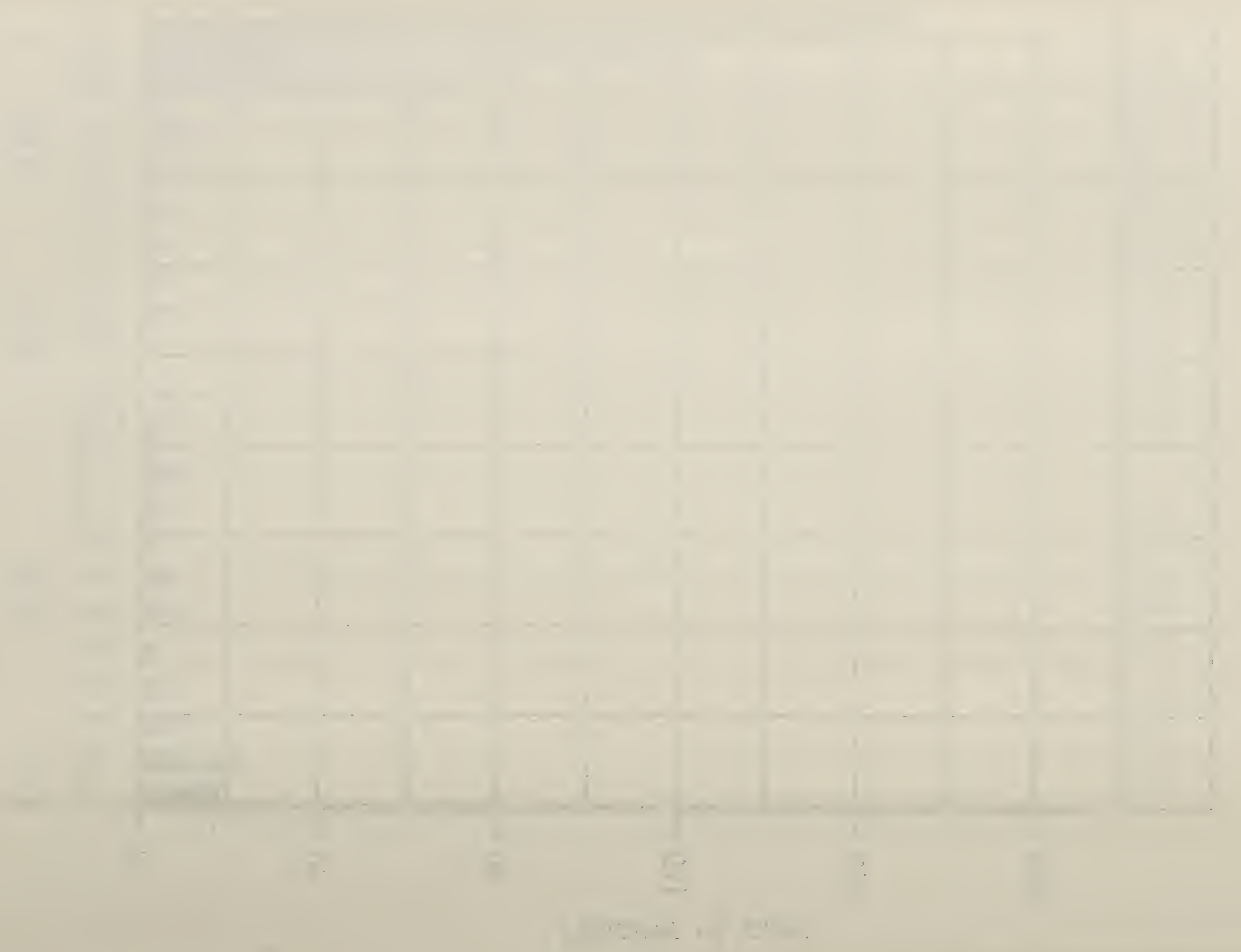
Table 35

INCIDENCE OF NOTIFIED AND CONFIRMED CASES OF POLIOMYELITIS BY RACE, SEX AND AGE GROUPS IN SINGAPORE, 1962

Age	Europeans			Eurasians			Chinese			Malays			Indians			Others			Total		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
0— 4	..	..	..	..	..	..	3	4	7	1	..	1	..	1	1	..	..	..	4	5	9
5— 9	..	..	..	..	..	..	2	1	3	..	..	..	..	2	2	..	..	..	2	3	5
10—14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15—19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20—24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25—29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30—34	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
35—39	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
40—44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
45—49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50—54	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
55—59	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
60—64	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	..	..	..	..	..	..	5	5	10	1	..	1	..	3	3	..	..	..	6	8	14



POLIOMYELITIS CASES FOR 1957—1962



TYPHOID-FEVER

This infectious disease remains endemic. There was a total of 110 cases in Singapore for 1962, 65 in the City and 45 in the Rural areas.

Table 36 gives the monthly incidence of Typhoid in Singapore, 1962.

Table 36

Month / Place	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
City ..	10	5	6	4	6	6	2	2	6	6	5	7	65
Rural ..	9	6	4	3	6	6	..	3	2	1	2	3	45
Total ..	19	11	10	7	12	12	2	5	8	7	7	10	110

LEPROSY

The incidence of leprosy shows a slight increase as compared with 1961. Below are the figures for leprosy for 1951, 1960, 1961 and 1962.

	1951	1960	1961	1962
City	142	119	62	69
Rural	79	27	39	43
Total ...	221	146	101	112

The incidence of the disease has shown a definite drop since 1951, and this confirms the view that the disease is being slowly brought under control. This is mainly due to the fact that the people know there is a cure for leprosy and tend to come forward voluntarily for treatment.

The Health Service to the Islands

Two floating dispensaries follow a programme whereby most of the islands are visited regularly. Each launch has a senior hospital assistant in charge who treats minor ailments and refers more serious cases to hospitals in the "mainland" (Singapore Island). Incidentally, he serves to discover cases of infectious diseases in islands and initiates appropriate action. A total of 8,797 cases were attended to (4,249 in St. John's Island and 4,548 in the other islands).

The Aedes Control and the Anti-Malarial Surveillance Unit

The Unit is responsible for:

(*a*) the control of Aedes mosquitoes in the airport within a perimeter of 800 metres;

(*b*) malaria surveillance on an island-wide basis;

(*c*) check on mosquito breeding areas in the Rural area.

Aedes Stegomyia Control.—A perimeter of 800 metres round the airport is under constant vigilance and control for Aedes ægypti breeding. This ensures that the airport protection area of a perimeter of 400 metres is completely free from larval and adult forms of all mosquitoes, with special attention paid to possible vectors of yellow fever.

The Aedes Indices achieved in 1962 are as shown in Table 37 a result of 70 surveys covering 123 check points and an average of 1,407 houses.

Table 37

Period of Survey (1962)	No. of Surveys	No. of houses checked	NUMBER OF COLLECTIONS MADE				Aedes (S) Aegypti index	Aedes (S) Albopictus index
			A (S) Aegypti	*A (S) Albopictus*	*A (A) Obsturau*	*Culex*		
1st Quarter ..	17	1,380	Nil	20	3	6	Nil	1.44
2nd Quarter ..	18	1,402	Nil	26	3	5	Nil	1.85
3rd Quarter ..	18	1,410	Nil	24	3	17	Nil	1.70
4th Quarter ..	17	1,437	Nil	30	2	5	Nil	2.08

Malaria Surveillance.—Thirty-six malaria cases were reported during the year. On investigation, it was found that all but two of them had been contracted abroad. The two exceptions were both isolated cases living in well controlled areas with no other case in either neighbourhood. They were both accident cases who had received blood transfusion and developed quartan malaria subsequently. The donors were investigated but no history of malaria attacks was elicited, though they had visited malarial areas.

Check on Mosquito breeding areas in the Rural Area.—Malaria Surveys — 292 rural malaria surveys were carried out as a check on the efficiency of Rural Anti-Malarial Work and the summary total of the various mosquito specimens collected on these surveys are given below:

	Collections
A. maculatus	49
A. sundaicus	20
A. letifer	—
A. karwari	—
A. baezai	9
A. kochi	474
A. hyrcanus	1,033
A. vagus	17
A. separatus	4
A. barbirostris	—
A. lencosphyrus	1

Special Surveys.—132 special surveys were conducted during the year to investigate notifications of malaria cases, for bringing new areas under anti-malarial control because of development, and in attending to mosquito, fly and other insect pest complaints. The following collections of mosquitoes were made during these surveys:

	Collections
A. maculatus	—
A. sundaicus	5
A. karwari	2
A. baezai	1
A. hyrcanus	23
A. kochi	19
A. vagus	3
A. separatus	1
Aedes Stegomyia	149
Culex	109

Table 38

WORK DONE UNDER AIRPORT DRAINAGE SCHEME

Widening of drains	1,104 feet
9″ invert drains constructed	317 feet
Brick wall silt traps constructed	3 feet
Brick retaining wall constructed	1 foot
Standpipe platforms constructed	2 feet
Maintenance — e.g. grass clearing and desilting ...	41,700 yards

Chapter Seven

THE SCHOOL HEALTH SERVICES

GENERAL

THE School Health Service functions at the Institute of Health, Outram Road, and is responsible for the prevention of disease and the promotion and maintenance of health among the school children and it provides the following services:

(1) routine and special examination of school children;
(2) treatment of minor ailments and nutritional defects;
(3) reference of cases to specialists in the various institutions for investigations, treatment or advice;
(4) control of tuberculosis in school population including teachers, hawkers and other staff;
(5) control of other infectious diseases;
(6) sanitary inspection of school premises;
(7) ensuring the compliance of the provisions of the Education Ordinance (1957) and the Regulations made thereunder.

It also advises on plans for school buildings and assists in the Health Education Programme of the Department. It is centrally administered from the Institute of Health.

STAFF

The staff at the end of 1962 comprised 1 senior health officer in charge of Schools, 6 health officers, 5 Lady health officers, 2 health sisters, 13 staff nurses, 8 assistant nurses, 1 almoner, 4 dispensing assistants, 1 laboratory technician, 2 public health inspectors, 1 radiographer and other miscellaneous subordinate staff.

During the year five new schools were opened. At the end of 1962 there were 573 schools in the State, not including the miscellaneous schools (i.e. religious, commercial, sewing, dancing, etc.).

In addition to the five new schools, many of the existing schools carried out additions and alterations to enlarge their premises to make accommodation available for more pupils. There were approximately 55,722 new entrants, most of whom were admitted into the first year of the primary school course. The total school population rose from 379,602 in 1961 to 401,587 in 1962, an increase of 21,985.

A classification of Government, Government-aided and private schools together with the enrolment for 1961 and 1962 is shown in Table 39.

The geographical distribution of schools and the enrolment of Government and Government-aided schools as compared with private schools are shown in Tables 40 and 41.

Table 39

SUMMARY OF SCHOOLS AND SCHOOL POPULATION

	Number of Schools		Enrolment	
	1961	1962	1961	1962
Government Schools				
(*a*) English	259	131	145,742	149,881
(*b*) Malay	79	47	22,201	25,343
(*c*) Chinese	21	12	11,551	13,079
(*d*) Indian	2	2	132	133
(*e*) Integrated	14	12	7,284	16,581
Aided Schools				
(*a*) English	69	47	40,964	43,240
(*b*) Malay	—	—	—	—
(*c*) Chinese	236	230	138,472	138,651
(*d*) Indian	15	13	1,287	1,373
Private Schools				
(*a*) English	48	40	7,120	8,520
(*b*) Chinese	33	34	4,849	4,786
New Schools	—	5	—	—
Total ...	776	573	379,602	401,587

51.05 per cent of all the pupils attended Government schools.
45.63 per cent of all the pupils attended Aided schools.
3.32 per cent of all the pupils attended Unaided schools.

Table 40

GEOGRAPHICAL DISTRIBUTION OF SCHOOLS IN SINGAPORE FOR 1962

	City	Rural	Island
Government and Government-Aided Schools ...	254	221	19
Private Schools	58	16	—

Table 41

DISTRIBUTION OF SCHOOL POPULATION IN SINGAPORE SCHOOLS FOR 1961 AND 1962

	1961	1962
Government and Government-Aided Schools ...	367,633	388,281
Private Schools	11,969	13,306
Total ...	379,602	401,587

General Health

On the whole, the general standard of health of the new entrants is fair, and that of the school leavers good.

Of the total number of school children examined by the Social Health officers, 66.57 per cent of the boys examined were rated as being of good general condition, 32.16 per cent fair, and 1.27 per cent poor. The corresponding figures for girls were 44.01 per cent good, 49.67 per cent fair and 6.33 per cent poor.

Routine Medical Examination

Due to the lack of medical staff, the routine medical examination of children was confined to Government and Government-aided schools only. Whilst no examination are conducted at non-aided (private) schools, children from such schools, may and do attend the school clinics which are open to all school children.

Because of the enormous size of the school population, it has been found necessary to establish a system of selective examinations. The School Health Officers confine their attention to particular groups. The groups include:

(*a*) new entrants;
(*b*) primary and secondary school leavers;
(*c*) defectives found at previous examinations;
(*d*) others, referred by the principals or teachers because their physical or mental progress was considered to be below par.

Table 42 shows the number of medical examinations by sex, of the respective groups.

Table 42

CLASSIFICATION OF MEDICAL EXAMINATIONS DONE ON SCHOOL CHILDREN IN SINGAPORE IN 1962

	Girls	Boys	Total
New Entrants ...	24,931	26,973	51,904
Primary Leavers ...	15,949	19,746	35,695
Secondary Leavers ...	4,223	5,050	9,273
Re-examinations ...	16,931	4,604	21,535
Others ...	8,869	5,116	13,985
Total ...	70,903	61,489	132,392

Out of a total of 494 Government and Government-aided schools, 474 were visited by a health officer or a lady health officer, and in the case of a mixed school by both a health officer and a lady health officer. A total number of 132,392 children were examined as against 93,402 in 1961* and 109,214 in 1960.

Table 43 shows the summary of schools, school population, children examined and health officer, 1958–62.

Table 43

SUMMARY OF SCHOOLS, SCHOOL POPULATION, CHILDREN EXAMINED AND HEALTH OFFICERS, 1958–62

	1958	1959	1960	1961	1962
Registered Schools ...	702	718	762	776	573
Students	295,481	320,977	353,408	379,604	401,587
Students examined ...	74,058	124,250	109,214	93,402	132,392
Health Officers ...	13	11	12	11	11

*The low figure in 1961 was due to a Mass Cholera Immunisation Campaign when all School Health Personnel were diverted from normal duties to this campaign.

Table 44 shows the number of boys and girls examined at the various types of schools.

Table 44

CLASSIFICATION OF CHILDREN EXAMINED IN SINGAPORE SCHOOLS IN 1962

Schools	Girls	Boys	Total
Government English	25,987	26,336	52,323
Aided English	8,569	5,821	14,390
Government Chinese	1,632	2,245	3,877
Aided Chinese	24,605	20,504	45,109
Government Malay	5,501	3,469	8,970
Government and Aided Indian	619	202	821
Government Integrated	3,990	2,912	6,902
Total ...	70,903	61,489	132,392

Table 45

CLASSIFICATION OF SINGAPORE SCHOOLS INSPECTED BY SCHOOL HEALTH OFFICERS IN 1962

Schools	City	Rural	Island	Total
Government English ...	85	42	2	129
Aided English	24	15	–	39
Government Chinese ...	10	2	–	12
Aided Chinese	96	120	4	220
Government Malay ...	16	19	12	47
Government Indian ...	2	–	–	2
Aided Indian	6	7	–	13
Government Integrated ...	7	4	1	12
Total ...	246	209	19	474

Treatment of Minor Ailments.—Apart from dental caries and defective vision, a much higher percentage of defectives was found among the new entrants.

The following table gives the incidence of the various defects.

Table 46

INCIDENCE OF DEFECTS DETECTED IN ROUTINE SCHOOL MEDICAL EXAMINATION IN 1962

Defects	Girls Percentage	Boys Percentage
Dental caries	41.11	47.24
Skin conditions	9.15	4.36
Eye: Infections	.39	.73
Defective Vision	7.68	6.52
E.N.T.: Enlarge tonsils	.11	.15
Ear infections	.06	.34
Cardiac disorders	.39	.27
Respiratory infections	1.08	.96
Pulmonary tuberculosis	.05	.14
Genite-urinary conditions	.27	2.86
Anaemia under 60% haemoglobin	.58	.33
Worm infestation	5.06	1.34
Other abnormalities including postural defects, cleft palate and chest deformities	1.02	1.36

Children examined : Girls — 70,903; Boys — 61,489.

Dental Caries

This is by far the most common defect found among school children and about 45 per cent of them were found to be suffering from caries of varying severity. The present facilities offered by the Government for dental treatment are inadequate. There are only two Government dental clinics, one at the Institute of Health and the other at Tan Tock Seng Hospital. In addition, there are three school mobile dental clinics, and 20 school dental units. However, it is the intention of the Government to incorporate dental huts in the new schools that are to be built in the future. The Government has started a scheme to train local girls as dental nurses who on completion of their training should be able to augment the staff attached to the School Dental Service. Some 20 girls have gone into training at the newly formed Nurses Dental Training School at the Institute of Health and will be qualified for posting in 1964.

Skin Infections

Skin conditions such as sores, ulcers impetigo, ringworm, eczema and scabies are more common among children from the Rural area, due to the lower standard of environmental hygiene. Phrynoderma, xeroderma and follicular hyperkerotosis are common findings among children suffering from malnutrition and come from very poor homes. Nits and lice are more often found in Malay and Indian children.

Twenty-three cases of neuroderma were referred to the Hanson's Clinic and of these, one was admitted into the Trafalgar Home after the diagnosis of leprosy was confirmed.

Eye Conditions

Conjunctivitis, corneal opacities and occasionally trachemas were seen, and where necessary, referred to the ophthalmologist at the General Hospital.

Visual defects were relatively higher in the older children and they were referred to their own opticians for the supply of spectacles. The poorer children were issued with free spectacles at Government's expense. A total of 933 pairs of spectacles were supplied in 1962 as compared with 385 for 1961.

Organic Valvular Heart Disease

Mitral stenosis, auricular and ventricular septal defects, patent ductus arteriosis and pulmonary stenosis are the common heart defects found. In the case of the acquired cardiac disabilities they are probably of rheumatic origin although a previous history of rheumatic fever is very difficult to obtain.

These cases are referred to the Cardiac Clinic at the Institute of Health which is held every Tuesday morning under the charge of the Professor of Medicine, University of Singapore.

Blood Conditions

Cases of anæmia, particularly gross anæmia, were found more in the Rural areas where worm infestation is prevalent. A certain number of these cases were due to nutritional causes in both urban and rural areas.

Helminthiasis

A high percentage of children in the urban and rural areas are infested with threadworms and roundworms.

The children in the rural areas are, in addition, infested with hookworms. This due to the fact that there are less sanitary facilities, the use of nightsoil as garden or vegetable manure, and the failure of children to use foot-wear.

Personal Hygiene

Although there is some improvement in the general cleanliness among school children, yet it is felt that more attention should be paid to the care of teeth and finger nails and the wearing of shoes particularly in the rural schools. The school teachers can play an important part by devoting some time for the practical teaching of personal hygiene and for the daily inspection of the pupils for general cleanliness and good personal hygiene.

SCHOOL CLINICS

There is one main clinic at the Institute of Health, Outram Road, which functions daily both in the mornings and afternoons. There are three subsidiary clinics conducted at the general outpatient clinic premises in the Urban and Rural areas. These are (1) the Paya Lebar Clinic; (2) the Kallang Clinic; and (3) the Bukit Timah Clinic.

The Paya Lebar Clinic functions on Monday and Friday afternoons, the Kallang Clinic on Friday afternoons and the Bukit Timah Clinic on Saturday mornings. The Health officers responsible for the schools served by the particular clinic are in attendance at each clinic session to follow up their own cases. Cases requiring special attention are referred to the specialists, hospitals or other institutions.

Tables 47 and 48 show the attendances at the school clinics for the years 1959 to 1962, and the breakdown of school clinic attendances respectively, while Table 49 shows the cases referred to the specialists, hospitals and other institutions.

Table 47

ATTENDANCES AT THE SCHOOL CLINICS FROM 1959–62

	1959	1960	1961	1962
Total number of new cases	44,730	55.056	52,196	55,678
Total number of re-visits	59,004	81,057	74,612	92,664
Total ...	103,734	136,113	126,808	148,342

Table 48

ATTENDANCES AT SCHOOL HEALTH CLINICS IN 1962

	New Cases	Repeat Cases	Total
Institute of Health Clinic	44,767	81,288	126,055
Paya Lebar Clinic ...	5,660	4,635	10,295
Kallang Clinic ...	3,884	4,909	8,793
Bukit Timah Clinic ...	1,367	1,832	3,199
Total ...	55,678	92,664	148,342

Table 49

SCHOOL CHILDREN REFERRED TO SPECIALISTS, HOSPITALS AND OTHER INSTITUTIONS IN SINGAPORE IN 1962

(*a*) Cases referred to Specialists:	
Cardiac Specialist	212
E.N.T. Specialist	347
Psychologist	29
Pædiatrician	312
Ophthalmic Surgeon	584
Surgeons	1,007
Physicians	200
Orthopædic Surgeon	205
Skin Specialist	56
Gynæcologist	17
(*b*) Cases referred to Hospitals and other Institutions:	
General Hospital for admission	210
Casualty Department, General Hospital ...	1,248
Physiotherapy Department, General Hospital ...	7
Middleton Hospital	95
Trafalgar Home	1
Cases sent to School T.B. Officer	120
Dental Clinic at Tan Tock Seng Hospital ...	10
Dental Clinic at Institute of Health	441
Dental Clinic at Jalan Teck Whye	11
X-ray Department at General Hospital ...	128
X-ray Department at Institute of Health ...	2,220

SCHOOL TRAVELLING DISPENSARIES

The two travelling dispensaries in the charge of a senior staff nurse assisted by three nurses visited the rural and remote urban schools during the year for the treatment of minor ailments and to follow up cases referred by the School Health Officers.

The total number of visits to schools and the treatment given are shown in the following Table 50.

Table 50

TOTAL NUMBER OF VISITS TO SCHOOLS AND TREATMENT GIVEN BY THE TRAVELLING DISPENSARIES

	1960	1961	1962
Total number of visits to schools ...	1,315	909	935
Total number of treatment given ...	73,017	46,403	47,345

CONTROL OF TUBERCULOSIS IN SCHOOL

This is effected (1) through the routine school examination. Tuberculosis children are referred to and treated by the School Tuberculosis Officer. (2) routine Chest X-ray examination of teachers, other school staff and hawkers.

From July 1962 the routine annual X-ray examination of teachers, school staff and hawkers already in employment was taken over by the Assistant Director of Medical Services (Tuberculosis) as part of the anti-tuberculosis programme for schools undertaken by the Tuberculosis Control Unit.

INFECTIOUS DISEASES

Table 51 shows the number and types of cases of infectious diseases reported during the last five years in schools in Singapore.

Table 51

INFECTIOUS DISEASES IN SCHOOLS IN SINGAPORE 1958–62

	1958	1959	1960	1961	1962
Chickenpox ...	202	202	244	170	158
Diphtheria ...	124	272	425	335	162
Mumps ...	207	325	984	447	300
Dysentery ...	6	16	26	26	24
Leprosy ...	4	11	6	3	1
Malaria ...	1	4	1	2	6
Measles ...	140	19	20	17	28
Poliomyelitis ...	14	—	2	3	1
Typhoid fever ...	6	13	6	7	—
Whooping Cough ...	34	20	83	35	25

HOME AND SCHOOL VISITING

Home and Schools were visited by a team of School Health nurses. They were responsible for the following:

(i) to investigate and follow-up cases of tuberculosis;

(ii) to follow-up cases of infectious diseases reported by various authorities;

(iii) to take throat swabs of all indirect contacts of cases of diphtheria reported by the District Health officers (2,458 throat swabs were taken in 1962 as against 2,106 in 1961);

(iv) to re-vaccinate new entrants against smallpox in accordance with the Quarantine and Prevention of Diseases Ordinance;

(v) to carry out the preliminary examination of the school children including the taking and recording of the heights and weights prior to the routine medical examination of these children by the School Health Officers.

ALMONER SERVICE

This service commenced in December 1961 when an almoner was appointed for the School Health Section. The majority of probelms dealt with during the year were as follows:

In the Tuberculosis Treatment Section.—(*a*) children referred for tuberculosis treatment allowance; (*b*) children on the waiting list for feeds.

In the School Clinics.—(*c*) non-attendance of defaulters suffering from chronic complaints; (*d*) educationally backward children; (*e*) malnourished children.

In Schools.—(*f*) mentally retarded and educationally backward children; (*g*) truants; (*h*) malnourished and undernourished children.

FEEDING SCHEMES

There are two types of feeding schemes for school children. Slightly undernourished children are supplied with free skimmed milk, made available through the courtesy of the Social Welfare Department on the recommendations of the School Health officers. The milk which is prepared in the school is flavoured with Milo and distributed to the children during the recess.

This skimmed milk preparation is now very popular with the children and 37,308 were recommended for the issue of this milk for the year as against 20,936 in 1961.

The other scheme is to help those children belonging to the less—provided families. Whilst the scheme caters for school children with any type of pathological condition, in practice it is found that most of those receiving this extra nutrition have some type of tuberculosis lesion. A sum of $22,000 was provided by the Government in the 1961 Estimates to meet the cost of this scheme.

The ration consists of:

1 lb. full cream powdered milk;
½ lb. vitaminised skimmed milk;
¼ lb. ovaltine for flavouring;
½ lb. fresh butter;
6 fresh hen eggs;
6 oranges;
1 lb. groundnuts.

The above ration is issued fortnightly to the child until such time as his condition shows sufficient improvement. During the year 6,460 such fortnightly rations were issued to 508 children.

ENVIRONMENTAL HYGIENE IN SCHOOLS

Further progress was made in the field of environmental hygiene and sanitation in the Singapore schools during the year 1962.

New school buildings were erected with due consideration to health and hygiene and many of the old buildings were renovated to improve existing sanitary conditions. Ninety-two layout and building plans were referred for the advice and recommendations of this Branch during the year. Fifty-five of them were recommended for approval while thirty-seven were returned for necessary amendments.

Revision of the existing Schools Regulations and drafting of legislation for the control of kindergartens are expected to be finalised soon.

Two fully qualified Public Health Inspectors made regular visits to various schools for the purpose of ensuring the compliance of the health provisions as contained in the Education Ordinance, Schools Regulations and other relevant ordinances and regulations. In addition, special visits were made to investigate complaints received, nuisances reported, applications by new schools for registration made and new projects or additions and alterations applied for. During the year 875 inspections were made and 791 reports were forwarded to the Ministry of Education, principals of schools and other departments.

Overcrowding.—Overcrowding still exists in few of the schools, more particularly in the smaller vernacular schools. Such cases were reported to the Ministry of Education for appropriate action. During the year 240 Accommodation Certificates were issued.

Sanitation.—There is a gradual but steady trend of improvement in the general sanitation of the schools. Conversion of bucket system of latrines into water-borne type is prompty effected wherever public sewer mains are extended to the schools, and in areas where public sewers are non-existent, installation of septic tanks is adopted whenever the circumstances permit.

Nightsoil removal poses a problem in the remote rural schools. Clearance of nightsoil by private toties is seldom regular and this has often caused nuisance. Bore-hole latrines are recommended, wherever practicable, to overcome this problem.

School Tuckshops.—Regular inspections of the school tuckshops were carried out in order to ensure that a reasonable high standard of food hygiene is maintained in these premises. Appreciable improvement in tuckshop arrangements has been observed both in the City and Rural schools. An important health principle was incorporated in the existing school tuckshop regulations, prohibiting the sale of food and drinks other than those which conform to the standards as laid down in the Food and Drugs Ordinance and Regulation.

Chapter Eight

THE MATERNAL AND CHILD HEALTH SERVICES

GENERAL

MATERNAL and Child Health Services were started in the Municipality of Singapore in 1924, and in 1927 these services were introduced into the Rural area. Up to 1960, these services were carried on by the City Health Department and the Government Health Department in the City and the Rural areas respectively. With integration, these services have been unified and are now administered centrally. Financial integration was effected in 1961, and unified administration is evidenced by the fact that there is uniformity whenever it is possible to make it so.

The service operates a network of 3 types of clinics distributed as follows:

		Rural	City
1.	Main Centres	21	7
2.	Kampong Midwives Centres ...	8	—
3.	Visiting Centres	23	1

The Maternal and Child Health Branch is administered from the Institute of Health. The main function of the service is preventive, but limited curative work has been included to meet the exigencies of the health needs of the population. In addition to the routine work of these clinics, the Maternal and Child Health doctors assist with training programmes. This includes lectures to midwives, Health Visitors and Public Health Inspectors-in-Training.

Below is a list of the clinics and centres as on 31st December, 1962.

Main Clinics

Rural

Buona Vista
Holland Road
Bukit Timah
Jurong 12½ m.s.
Jurong 18 m.s.
Bukit Panjang
Ama Keng
Mandai
Thomson Road
Yio Chu Kang
Lim Ah Pin
Kim Chuan Road
Kampong Batak
Bedok 9 m.s.
Ulu Bedok
Changi
Sembawang
Keh Hai Road
Pulau Brani
Pulau Tekong
Kranji

City

Alexandra
Aljunied Road
Institute of Health
Kim Keat Road
Kreta Ayer
Joo Chiat Road
Prinsep Street

Midwife Centres
(Residential)

Kampong Loyang

Sompah

Jurong 10 m.s.

Ponggol 9¼ m.s.

Bulim 13¼ m.s.

St. John's Island

Lim Chu Kang

Pulau Ubin

Visiting Centres

Rural

Princess Elizabeth Est.
Tanjong Murai
Kampong Blukang
Kampong Bajau
Damar Laut
Pulau Sudong
Pulau Semakau
Pulau Seking
Pulau Seraya
Pulau Bukom Kechil
Lazarus Island
Pulau Ayer Merbau
Pulau Semulon
Pulau Ayer Merlimau
Chia Keng Village
Ayer Gemuroh
Pulau Ubin
Ponggol
Kampong Loyang
Pulau Sebarok
Woodlands 15½ m.s.
Bulim
Loyang

City

Radin Mas

The Service also attends to the needs of the child and mother population of the islands off Singapore. This is performed by a health team comprised of a Health Officer, a Health Nurse and a Hospital Assistant. The team travels by motor launch and these islands are visited at least weekly or bi-weekly.

One new clinic was opened up during the year at Kranji and three Kampong Midwife Centres were coverted into Visiting Centres, as well as being Midwife Centres.

THE MATERNITY SERVICES

These include (*a*) ante-natal care; (*b*) natal care; (*c*) post-natal care. In addition, the Family Planning Association holds regular sessions at the main Maternal and Child Health clinics.

Ante-Natal Care

An increasing number of mothers requiring ante-natal care attended the centres. The increase was in the region of 11,295 visits. There is no doubt that the increased attendances are to a large extent due to increased health consciousness of the general public and to the fact that the Kandang Kerbau Maternity Hospital has been trying to decentralise its ante-natal work and divert mothers to the Maternal and Child Health clinics. Ante-natal work, with the increased load, has naturally tended to become routine. Below is a comparative table of ante-natal visits to rural and city Maternal and Child Health clinics for the last three years.

Table 52

	Rural	City	Total
1960	105,907	27,760	133,567
1961	108,067	31,946	140,013
1962	111,995	39,313	151,308

Basic care includes: (1) full obstetrical history; (2) complete physical examination, (3) laboratory investigations: haemoglobin, serological tests for syphillis, stool examination for ova urine for albumin and sugar, blood pressure readings done at every visit.

Patients showing any abnormality are referred to Kandang Kerbau Hospital. Special emphasis has been on Health Education during the ante-natal session; and the Branch has been assisted in this by the Health Education Section.

Natal Care

This is essentially provided for in the Domiciliary Midwifery Service. Midwives employed by the Government are resident at the main clinics and at the midwife centres. There is a 24-hour service available for patients who have been attending the clinic and who are found to be suitable for domiciliary delivery. Despite the availability of the service of the midwife, there has been a definite preference for institutional delivery, specially in the City area.

The following table shows that the majority of deliveries occurs at the Kandang Kerbau Government Maternity Hospital as compared with those attended to by Health Midwives and Midwives.

Table 53

	No. of Confinements in the Home attended by Health Midwvies			Pr. Midwives	Confinements in Kandang Kerbau Hospital
	Rural Area	City Area	Total		
1960	6,640	1,221	7,861	13,504	36.267
1961	6,491	1,081	7,572	13,001	36,590
1962	5,045	880	5,925	10,572	37,861

Post-Natal Care

This is achieved by: (1) the Domiciliary After-Care Service; (2) Follow-up of new delivery by District Sister; (3) post-natal visits to the clinics.

(1) The Domiciliary After-Care Service, started on 1st April, 1960, continues to expend. The service caters for mothers who are delivered at Kandang Kerbau Maternity Hospital and then return home within 24 hours. This includes both the City and Rural areas.

A special after-care service now operates at Bukit Timah, Bukit Panjang, Kim Chuan and Jalan Eunos clinics where midwives are solely concerned with pueperal care. The mother and child receive daily attention until the cord drops off.

(2) Follow-up service by District Health Sisters.—Every registered new birth is visited by the District Health Sister. This includes mothers and infants who are delivered by private midwives. Where these cases are found to be ill in the puerperium, they are referred to the Health Officer in-charge of the district who then attends to them, if a private practitioner is not in attendance.

Supervision of Midwives

Midwives practising in Singapore are under the supervision of two Supervisors of Midwives — a Rural Supervisor and a City Supervisor. The Rural Supervisor is responsible for all Government midwives in the Rural area and pupil midwives undergoing their domiciliary training while the City Supervisor supervises the City midwives and the 367 midwives in private practice. This number excludes trained nurse midwives.

There is a total of 485 midwives in Singapore, 118 being in Government Service and the rest in practice.

To meet a long awaited needs, refresher courses were started for practising midwives in June 1960. Since its inception, six courses have been held at Kandang Kerbau Maternity Hospital and a total of 20 Government in-service midwives have undergone the course.

Training of Midwifery Assistants for Southern Islands

This scheme aims to train suitable women from the islands as midwifery assistants to enable them to deal with normal deliveries among the indigenous island population. The course is of one year's duration and is a temporary measure to meet health needs in the islands.

Table 54 and Table 55 are statistical summaries of work done in relation to maternal services.

Table 54

—	1960			1961			1962		
	Rural	City	Total	Rural	City	Total	Rural	City	Total
Ante-natal visits to Clinics	105,907	27,660	133,567	108,067	31,946	140,013	111,995	39,313	151,308
Post-natal visits to Clinics	4,491	..	4,491	4,516	58	4,574	3,922	339	4,261
Confinements attended to by Government Midwives	6,640	1,137	7,777	6,491	1,081	7,572	5,045	880	5,925
Mothers in labour sent to K.K.M.H.* ..	530	32	562	812	29	841	874	26	873
Visits by Midwives in the Puerperium† ..	62,953	49,006	111,959	86,781	66,948	153,729	90,251	57,621	147,872

Table 55

—	1960 Total	1961 Total	1962 Total
Total Number of Live Births	61,775	59,930	58,977
Total Number of Still Births	886	763	740
Confinements in K.K.M.H.	36,267	36,590	37,861
Confinements attended to by Government Midwives	7,777	7,572	5,925
Confinements attended to by Pupil Midwives Class B‡ ..	13,504	13,001	10,572
Confinements attended to by Private Doctors	3,264	2,959	2,924
Self-attended cases	114	52	22

* Kandang Kerbau Maternity Hospital.

† These include visits for cases in both the Domiciliary Service and the Domiciliary After-Care Service.

‡ There are three classes of Midwives:—

Class A .. qualified Nurse Midwife.
Class B .. qualified Midwife.
Class C .. Unqualified Midwife (now almost non-existent).

The Child Health Services

The services provided for the pre-school child are:

(i) a comprehensive immunisation programme;

(ii) advice and Health Education to mothers on child care, in particular the infant;

(iii) treatment of minor ailments.

(i) *The Immunisation Programme.*—This includes BCG vaccination, vaccination against smallpox, immunisation against diphtheria, whooping cough and pertussis, Polio immunisation.

BCG Vaccination.—This is on a voluntary basis, but there is satisfactory coverage. It is tied up with a long term anti-tuberculosis programme planned by the Tuberculosis Control Unit. During the year, the Maternal and Child Health clinics vaccinated 12,186 infants with BCG.

Smallpox Vaccination is compulsory. Under the Quarantine and Prevention of Diseases Ordinance, Chapter 147, all children must be vaccinated by the age of 6 months. A total of 47,175 children were vaccinated.

Diphtheria Immunisation.—This is given either alone or in combination with other immunising agents, giving protection against diphtheria, tetanus and whooping cough. More and more of the combined antigen is being used. Immunisation is carried out at all clinics, and by special teams which go out to the kampongs. A total of 58,594 children completed their primary immunisation with triple antigen. This figure is reported to constitute 71.97 per cent of children who originally had their first dose.

Despite the fact that immunisation has been available at Maternal and Child Health clinics for the past 14 years, the response on the part of the public has been poor. As a result, in March compulsory diphtheria immunisation was enforced.

Polio Immunisation.—In March this year, a Polio Immunisation Campaign was commenced, using oral Trivalent Sabine Vaccine. Two doses were given at an interval of 3 months and out of an estimated vulnerable fluid population of 300,000 aged 6 months to 6 years, 228,040 received the first dose and 206,929 completed the procedure with a second dose. The vaccine was administered at all main Maternal and Child Health clinics and was brought to a successful close in November 1963. A total of 76 per cent of the fluid population was protected.

Advice and Health Education on Child Care.—Attendances during 1962 at Maternal and Child Health clinics showed an overall increase as compared with 1961. There was an increase in both toddler and infant attendances. These were 427,237 attendances by infants and 733,216 attendances by toddlers and pre-school children. The corresponding figures for 1961 are 395,722 and 271,548 respectively. The total increase of 493,183 in 1962 is due mainly to two factors: (1) the Polio Immunisation Campaign, (2) compulsory Diphtheria immunisation.

The staff made use of every opportunity to give advice and health education. Children who attend the clinics are both sick and well children, as it has not been possible to separate the service in the face of the ever increasing health needs of this particular section of the population.

Advice given revolves mainly around the infant. The service also distributes powdered milk, multivitamins, commercial protein foods and other additional nutrients to less fortunate families.

Besides the clinic work, visits are made to homes of patients. Health Visiting has suffered greatly in recent years due to staff shortage and the ever increasing load of work.

The advisory aspect of work has also been sacrificed, being reduced to a bare minimum. Both the Polio Immunisation Campaign and compulsory diptheria immunisation have increased enormously the load of routine work; home visits are practically at a standstill. This is undesirable as home visiting is the backbone of the Service, but it is hoped that the Service will be able to revert to more normal lines.

Treatment of Minor Ailments.—Treatment of minor ailments has become a part of the functions of the Maternal and Child Health clinics but this is often done at the expense of preventive work.

Table 56

TABLE SHOWS ATTENDANCES, THE NUMBER OF CHILDREN IMMUNISED AND OTHER FUNCTIONS CARRIED OUT AT THE MATERNAL AND CHILD HEALTH CLINICS FOR 1960, 1961 AND 1962

—	1960			1961			1962		
	Rural	City	Total	Rural	City	Total	Rural	City	Total
Infant attendance	155,450	250,550	406,000	155,942	239,780	395,722	176,488	250,749	427,237
Toddler and pre-school attendances	129,061	97,939	227,000	144,688	126,860	271,548	333,077	400,139	733,216
B.C.G. attendances	5,401	6,192	11,593	5,039	6,420	11,459	5,602	6,584	12,186
Primary Vaccination attendances	20,997	28,204	49,201	18,397	27,088	54,065	20,554	26,621	47,175
Diphtheria Immunisation:—									
1st dose	3,044	5,813	8,857	1,774	3,756	5,530	3,497	13,123	16,620
2nd dose	2,654	6,254	8,909	1,526	2,627	4,153	2,664	10,579	13,243
Boosters	5,072	6,366	11,438	2,806	675	3,481	2,909	4,800	7,709
Kampong Diphtheria Immunisation:—									
1st dose	1,517	..	1,517	343	..	343	383	..	383
2nd dose	1,182	..	1,182	211	..	211	140	..	140
Boosters	1,097	..	1,097	415	..	415	231	..	231
Triple Antigen Immunisation (Clinic):—									
1st dose	18,126	20,163	38,289	18,607	22,982	41,589	23,650	40,045	63,695
2nd dose	16,459	16,757	33,216	16,357	19,356	35,713	20,003	31,549	51,552
3rd dose	15,505	13,919	29,424	14,692	18,335	33,027	17,387	27,622	45,009
Boosters	10,453	..	10,453	10,738	4,920	15,658	12,875	7,695	20,570

Table 57

TABLE SHOWS ATTENDANCES, THE NUMBER OF CHILDREN IMMUNISED AND OTHER FUNCTIONS CARRIED OUT AT THE MATERNAL AND CHILD HEALTH CLINICS FOR 1960, 1961 AND 1962

—	1960			1961			1962		
	Rural	City	Total	Rural	City	Total	Rural	City	Total
Kampong Triple Antigen Immunisation:—									
1st dose	798	..	798	569	..	569	717	..	717
2nd dose	513	..	513	364	..	364	302	..	302
3rd dose	258	..	258	267	..	267	202	..	202
Boosters	612	..	612	657	..	657	715	..	715
Free Milk Distribution:—									
1. Milk to A.N. Mothers (No. of mothers)	16,336	555	16,891	8,217	1,529	9,746	2,242	1,217	3,459
2. Milk to children (No. of children) ..	27,159	13,686	40,845	33,873	17,015	50,888	2,947	11,506	14,452
3. Total amount of powdered milk (lb.)	43,372	53,178	96,550	42,050	55,910	98,000	36,194	60,097	96,291
Skimmed Milk:—									
Mothers	..	..	..	12,872	5,063	17,935	8,191	5,029	13,280
Children	..	..	..	2,127	442	2,569	495	171	666
Total No. of lb.	..	..	..	15,171	9,000	24,171	21,972	7,976	29,948

Table 58

VITAL STATISTICS — RURAL AREA

	1960	1961	1962
		Number	
Live-births	26,029	25,578	9,277
Still-births	368	346	81
Total births	26,397	25,924	9,358
Maternal deaths	12	12	3
Perinatal deaths (deaths under 7 days of age and still-births)	716	665	124
Neonatal deaths (deaths under 4 weeks of age)	452	427	68
Infant deaths (deaths under 1 year of age)	966	823	259
		Rate	
Still-births rate (number of still-births per thousand live and still-births) ...	13.94	13.35	8.66
Maternal mortality rate (number of maternal deaths per thousand live and still-births)	0.45	0.46	0.32
Perinatal mortality rate (number of deaths under 7 days of age and still-births per thousand live and still-births) ...	27.12	25.65	13.25
Neonatal mortality rate (number of deaths under 4 weeks of age per thousand live-births	17.37	16.69	7.33
Infant mortality rate (number of deaths under 1 year of age per thousand live-births	37.11	32.18	27.92

Note:—Figures for the years 1960, 1961 and 1962 exclude events occurring among non-locally domiciled services personnel (including United Kingdom based civilians employed by the Services) and their families.

Table 59

VITAL STATISTICS — CITY AREA

	1960	1961	1962
		Number	
Live-births	35,646	34,363	49,700
Still-births	368	346	659
Total births	36,014	34,709	50,359
Maternal deaths	16	12	20
Perinatal deaths (deaths under 7 years of age and still-births)	1,031	928	1,469
Neonatal deaths (deaths under 4 weeks of age)	641	632	1,059
Infant deaths (deaths under 1 year of age)	1,192	1,114	1,584
		Rate	
Still-births rate (number of still-births per thousand live and still-births) ...	10.32	10.07	13.09
Maternal mortality rate (number of maternal deaths per thousand live and still-births)	0.33	0.34	0.40
Perinatal mortality rate (number of deaths under 7 days of age and still-births per thousand live and still-births) ...	28.63	26.53	29.17
Neonatal mortality rate (number of deaths under 4 weeks of age per thousand live-births)	17.98	18.40	21.31
Infant mortality rate (number of deaths under 1 year of age per thousand live-births)	31.12	32.43	31.87

Note:—Figures for these years exclude events occurring among non-locally domiciled services personnel (including United Kingdom based civilians employed by the Services) and their families.

These figures were obtained from the Chief Statistician, Department of Statistics, Singapore.

Chapter Nine

THE HEALTH EDUCATION, TRAINING AND SPECIAL ASSIGNMENTS BRANCH

The Branch, created in November 1961, is now under the charge of a Senior Health Officer.

There are three Units: (1) Health Education; (2) Training; (3) Special Assignments.

THE HEALTH EDUCATION UNIT

This Unit is responsible for the dissemination of health education to the population in general and to special priority categories.

The activities of this Unit were stepped up considerably during the year, and it has now embarked on several projects on an organised basis.

Among the achievements for the year are:

A 5-phased programme to introduce Health Education in Primary Schools.—Three phases were implemented in 1962, commencing with the first phase which was a conference of Heads of 15 Primary schools from the four-language streams from 7th to 11th May. The conference agreed in principle to —

(*a*) the introduction of health education into Primary schools;

(*b*) the need for teacher preparation;

(*c*) the draft programme for a special course in health education for Primary school teachers.

Preparation of health education material for use in schools (Phase II). A special course in health education for 33 Primary school teachers from the 15 Primary schools represented at the Conference (Phase III). This course was held at the Teachers' Training College, and covered the content for a programme of health education suitable for Primary schools. The teachers were given a general picture of health problems in Singapore and, in particular, those relating to the Primary school child. The course emphasised the opportunities presented to teachers to disseminate knowledge on health.

Refresher Courses.—A course in health education was included in refresher courses held for in-service midwives by the Kandang Kerbau Hospital. The first course of two months duration commenced in October and laid stress on the importance of the Midwife as a Health Educator. The course will be continued and it is hoped that four such courses will be held yearly.

Polio Immunisation Campaign.—An island-wide publicity programme was put into operation for this campaign. Posters, leaflets, cinema slides were used, and widespread publicity achieved through the press, radio and mobile teams with public address vans.

World Health Day.—Celebrations were organised by the Branch with a forum on "Prevent Blindness — Preserve Sight" held at the Cultural Centre.

Health Education Materials Prepared.—(i) Posters and Pamphlets for the Polio Immunisation Campaign and for compulsory diphtheria immunisation were prepared and printed.

(ii) Materials for primary schools included posters and flannel graphs on personal hygiene, dental health and food hygiene, hookworm and the chain of infection.

(iii) Three sound film strips were prepared.

THE TRAINING UNIT

The Training Unit is divided into three Sections:

(*a*) the training of Public Health Inspectors;

(*b*) the training of Public Health nurses;

(*c*) in-service training courses for (i) technical subordinates, (ii) probationary Public Health Inspectors, (iii) other health auxiliaries.

It also liaises with other training institutions and plans courses and seminars.

The Training of Public Health Inspectors.—Training of Public Health Inspectors is carried out at the Institute of Health and is one of the oldest courses of training in Singapore. The Oversea Examination Board (see Appendix I) which was originally established in 1921 is responsible for preparing the scheme of training and holding of examinations for Public Health Inspectors in this region — Singapore, Federation of Malaya, Sarawak, Colony of North Borneo and Brunei. The Board has functioned continuously since its inception except for the interruption due to the World War II of 1942–46, and for a brief period between 1951–52, when staff shortages made it impossible to run the course.

In January 1959, a Public Health Inspectors' Training School was started in Kuala Lumpur on the same lines as the training centre in Singapore, and since then courses and examinations for Public Health Inspectors are held simultaneously in Singapore and Kuala Lumpur.

The 10-month course leads to the Diploma of the Royal Society of Health.

The Public Health Inspectors' Training Course, 1962.—For this year the Public Health Inspectors' Training Course commenced on 15th January and ended on 3rd November.

Ten students were admitted for training during the year of whom nine passed the examination on 21st November, 1962, and qualifying for the Diploma of the Royal Society of Health (See Appendix II).

Seven students from the Borneo Territories received their Public Health Inspectors training under the Colombo Plan in 1962.

One 1961 referred student also sat for the November 1962 examination for Public Health Inspectors but was unsuccessful.

The Training of Public Nurses.—In 1955 the first Health Visitors' Course held in Malaya was conducted in Penang. The Examination Board is responsible for preparation of the training scheme and also the conduct of its examination. In 1958 the Health Visitor's Course was started in Singapore under the direction of a W.H.O. Public Health Nurse Educator in the University Wing of the Institute of Health. Since that time two courses for Health Visitors — one in Singapore and one in Penang are concurrently in operation.

The above course which is of one year's duration leads to the Health Visitor's Certificate of the Royal Society of Health.

The Health Visitor's Course, 1962.—This course commenced on 26th March, 1962 and ended on 31st January, 1963. Sixteen candidates were admitted for the course.

One of the above candidates was trained under the Colombo Plan training scheme and she was sent by the Sarawak Government, while the rest of the students were Singapore Government candidates.

Th examination for Health Visitors will be held from 2nd to 8th February, 1963. Results since published show that 14 candidates completed the course successfully.

In-service Training Course, 1962.—A course for 11 Probationary Public Health Inspectors was held from October–December 1962.

SPECIAL ASSIGNMENTS

Booklet on Diphtheria Immunisation.—In conjunction with the enforcement of Compulsory Diphtheria Ordinance, a booklet called *Compulsory Diphtheria Immunisation* was prepared by this Unit for distribution to medical practitioners in Singapore. This booklet is a historical review of Diphtheria in Singapore and demonstrates the need for compulsory immunisation. It contains a synopsis of the Diphtheria Immunisation Ordinance and Regulations.

W.H.O. Training Course on Food Inspection, Singapore.—Singapore was selected as the venue for a W.H.O. Fellowship on Food Inspection held from 23rd July — 4th August, 1962. Nine delegates from Afghanistan, Burma, Ceylon, India, Indonesia and Thailand participated. A varied and interesting programme on all aspects of food hygiene was planned by this Unit. The programme included, among other things, visits to various food establishments and food factories, and a two-hour Seminar on the Hawker Problem in Singapore.

Chapter Ten

MARKETS AND HAWKERS

BRANCH

THIS Branch deals with the licensing and control of hawkers, the supervision of public markets, licensing and control of private markets and private lands used for accommodation of static hawkers. It is under the control of a Superintendent.

Hawkers Section.—The staff consists of: (i) 2 Senior Markets and Hawkers Inspectors; (ii) 19 Markets and Hawkers Inspectors (4 posts vacant); (iii) 57 Assistant Markets and Hawkers Inspectors (27 post vacant).

The hawker problem continues to be a controversial one; there being an estimated total of about 40,000 licensed and unlicensed hawkers. Of this number, 4,212 are licensed, giving an approximate ratio of 1 to 10 of licensed to unlicensed hawkers. Table 60 below gives the number of licensed hawkers from 1958 to 1962 for both the city and rural areas.

Table 60

NUMBER OF LICENSED HAWKERS

	1958	1959	1960	1961	1962
Itinerant	1,759	864	617	345	441
Day Street Pitches — City Area	2,229	2,166	3,065	2,586	2,515
Day Street Pitches — Rural Area	—	—	—	271	331
Night Street Pitches ...	1,193	1,064	1,198	969	925
Total ...	5,181	4,094	4,880	4,171	4,212

The problem posed by these unlicensed hawkers is in many ways a health one in that these hawkers operate in insanitary circumstances and to a large extent are completely oblivious of elementary standards of hygiene. In June 1962 radio telephones were installed in the four vans of the department. This innovation has proved to be of great assistance in carrying out the duties of the department in the control of hawkers.

Hawkers selling at the following new sites were issued licences during the year: Queenstown V; Lorong Tai Seng; Lorong 15, Geylang; Lorong 41, Geylang; Dunman Road; Angullia Park; Jalan Laut. In front of Prinsep Clinic, High Street backlane between North Bridge Road and Hill Street.

Table 61

NUMBER OF LICENSES ISSUED FOR STREET PITCHES IN RURAL AREA

Bukit Panjang/Jurong District	161
Katong District	37
Serangoon District	133
Total ...	331

During the year court action was taken against 1,190 cases, and a total of $15,560 was collected in fines.

Markets Section.—The staff consists of:

(1) Senior Markets and Hawkers Inspector (Vacant);
(2) 2 Market Overseers, Grade A;
(3) 35 Market Overseers, Grade B (7 posts vacant);
(4) 56 Watchmen (9 posts vacant);
(5) 195 Labourers (6 posts vacant).

There are 29 markets in the city area, and 7 markets in the rural area. This includes one new market opened in Serangoon Garden Estate in 1962. This market has accommodation for 148 stalls. During the year improvements were made to existing markets and 4,290 licences were issued for market stalls in the city area, and a further 739 for market stalls in the rural area. Total revenue for 1962 from the department was $1,442,978.67 of which $1,333,944.67 came from the fees collected in the city area, and the remaining $109,034 from the rural area. These fees were collected as:

(1) Hawker Licence fees;
(2) Market stalls licence fees;
(3) Shelter stall licence fees;
(4) Private market licence fees;
(5) Commission on fish auctions;
(6) Street pitches licences fees;
(7) Itinerant hawkers licence fees.

The work of this Branch is co-ordinated by an *ad hoc* committee which implements Government hawkers policy, and acts in advisory capacity to the Minister in matters relating to hawkers.

Chapter Eleven

OTHER SERVICES UNDER PUBLIC HEALTH DIVISION HEADQUARTERS

THE following sections are directly under the Public Health Division Headquarters administration:

(1) Public Health Engineering Unit;

(2) Cemeteries and Crematoria Unit;

(3) Labour and Welfare Unit;

(4) Transport Centre.

PUBLIC HEALTH ENGINEERING UNIT

This unit is under the charge of the Public Health Engineer.

The Public Health Engineering Unit is mainly advisory, but has taken over the functions of kampong sanitation, and the anti-malarial control of the Jurong Industrial Area.

The care of pumps and wells in the resettlement areas of the Housing and Development Board has been handed over to the Public Health Division, and the Public Health Engineer and his staff are now responsible for their maintenance. During 1962, this unit took over the maintenance of another three installations, of wells, pumps and water storage tanks in the resettlement area (53B of 11 milestone, Chua Chu Kang Road) from the Housing and Development Board.

Environmental sanitation improvements were carried out in a total of 46 kampongs in the rural areas, and a summary of the work done, costing approximately $132,126 (labour and materials) is shown in the table below:

Table 62

SUMMARY OF KAMPONG SANITATION WORK EXECUTED BY THE PUBLIC HEALTH ENGINEERING UNIT IN SINGAPORE, 1962

Details of Work	Serangoon	Katong	Bukit Panjang/ Jurong
1. Kampong sanitation	14	10	22
2. Channel drains constructed (1 yd.) ...	1,094	1,495	745
3. Earth drains (1 yd.)	100	177	82
4. Subsoil drains (1 yd.)	202	—	278
5. Culverts (Nos.)	—	7	13
6. Standpipe Aprons (Nos.)	—	1	1
7. Latrines (pit, boreholes (Nos.), etc.) ...	—	2	22
8. Urinals (Nos.)	—	—	—
9. Bathrooms (Nos.)	—	1	—
10. Wells (Nos.)	—	—	—
11. Cost	$53,587	$30,687	$47,852

CEMETERIES AND CREMATORIA UNIT

Burial grounds are controlled under the Municipal Ordinance of 1896 and the Amendment Ordinance of 1905, by which the grant of land for burial purposes can only be obtained by licence or special grant. There are 3 types of burial grounds still in use:

Type A. closed under Municipal Ordinance except for burials and reservations;

Type B. covered with graves. Only reserve grave plots now being used for burials;

Type C. with relatively big areas of ground still available for burials.

There are altogether ten of the above types of burial grounds within City limits.

A scheme to provide two crematoria in Upper Aljunied Road was thought of as early as 1923 as in Singapore today with a land area of only 209.5 square miles and a population density of over 7,000 per square mile which has to be allocated for living, industries, work and play, the establishment of a crematorium in the State would conserve land required for burials and for other purposes; and after much discussion the general layout plans for side roads, planning and housing for the staff were approved. There would be no discrimination in respect of race, creed, religion or wealth in the use of the crematoria. One crematorium would be used by all creeds and the other would serve as a stand-by to be used when required to cope with the demand. At the same time separate facilities with regard to religious services are available for the different religions. On these principles the two crematoria at Mount Vernon were completed and commissioned on the 15th October, 1962.

LABOUR AND WELFARE UNIT

Prior to 1st January, 1962, environmental health in rural areas was controlled by the Government Public Health Division. There were approximately 1,400 Government employees in the Rural Health Section. Up to 31st December, 1961, one executive officer was on full-time duties of looking after the welfare of these daily-rated employees. As a result of an agreement made between the Public Daily Rated Employees Unions and the Government on 25th November, 1961, matters concerning labour and welfare were considerably increased. Furthermore, it was expected that in 1962 about 4,000 daily-rated employees formerly catered for by the Labour and Welfare Section of the City Council would come under Government control. Therefore, a unit known as Labour and Welfare was established with effect from 1st January, 1962 with an officer of Senior Executive Officer grade as the head of this unit. It was also decided to staff this unit with 2 executive officers, 2 clerical officers, 2 Labour Lines supervisors and a typist. The Labour and Welfare Unit started functioning with effect from 1st January, 1962.

Matters such as day-to-day grievances, complaints of mutual differences between labourers themselves and complaints about supervisory staff and *vice versa,* complaints on terms and conditions of service and various personal welfare matters came under the purview of this unit. With effect from 8th August, 1962, all matters concerning daily-rated employees of integrated departments in this Ministry were transferred from the Labour and Welfare Section of the City Council to this unit. In addition to the labour and welfare matters of the Health Ministry, this unit also was directed by the Permanent Secretary (Treasury) to advise Ministries of Law, Culture, Education and Home Affairs.

The Treasury directed that two Departmental Works Committees be established — one as First Departmental Works Committee covering the Ministries mentioned above with Senior Executive Officer (Labour and Welfare) of this Ministry as Chairman.

Staff matters concerning grievances of daily-rated employees were settled either by discussion or at Departmental Works Committee level. There has been no serious labour trouble during the year under review. The new procedure on labour and welfare matters has been working quite satisfactorily.

TRANSPORT CENTRE

Introduction.—The primary function of the Transport Section was to provide a central organisation for the control of the fleet of vehicles owned by the Public Health Division. This was carried out during the year, entailing the —

(*a*) maintenance of a central depôt at Mackenzie Road;
(*b*) maintenance of sub-depôts in the three Rural Districts;
(*c*) control of the staff, drivers and other employees attached to it; and
(*d*) control of the expenditure provided for the maintenance of transport and wages.

Staff.—The section is under a Superintendent of Transport with the following monthly-rated and daily-rated staff: 6 clerks; 1 storekeeper; 1 office boy; 3 watchmen; 10 general purpose drivers; 194 daily-rated staff.

Depots.—There is a depôt and three sub-depôts in the Rural Districts, namely:

(*a*) Central Depôt (Mackenzie Road);
(*b*) Sub-depôt at Katong District;
(*c*) Sub-depôt at Serangoon District;
(*d*) Sub-depôt at Bukit Panjang/Jurong District.

Vehicles.—Fifteen new vehicles were purchased during the year and four received "on loan" from U.N.I.C.E.F. The number of vehicles in the fleet under the control of the section was 235.

Chapter Twelve

DENTAL BRANCH

During 1962 there was considerable progress made in the development of the public dental services, particularly in respect of the School Dental Service. On the clinical side, dental treatment was provided to larger sections of the population, and the total number of patient-attendances at Government dental clinics reached 285,992 the highest figure recorded so far. The dental work performed by our operating staff included 208,042 tooth extractions, 64,762 dental fillings, and 41,350 temporary dressings. A record number of 5,990 artificial dentures were made for partients in various clinics, and 399 orthodontic appliances were fitted.

The expansion of these dental services was made possible by an increase in facilities and staff, and in 1962, the Chief Dental Officer, Mr. Wong Mook Qui, had under his direction an establishment of 244 officers, comprising 49 dental surgeons, 2 dental tutor sisters, 2 dental sisters, 52 dental nurses (including trainees), 21 dental technicians, 49 dental assistants (chairside) and 69 other staff. There were 34 dental clinics of various types in active operation.

SCHOOLS DIVISION

The provision of adequate dental care to Singapore school children remained a serious problem as the student enrolment reached a record number of 399,317 in 1962. Over 95 per cent of children, on entering school, needed dental treatment, and only a very few had ever received regular attention from their own dentists. There was an increasing demand for dental treatment, especially of the emergency types.

During the year four new dental clinics were established, one each at Telok Kurau School, Guillemard School, Kaki Bukit School and Bukit Panjang Out-patient Clinic. This brought the total number of school dental clinics to 19, and the returns of work for the year showed an all-round increase over the previous year. The total number of patient-attendances reached 119,953. The large number of dental extractions done, 79,171, was indicative of the poor dental condition generally found among Singapore school children. Over 49,000 permanent dental fillings had been done for the children.

Near the end of the year, construction work was begun on 14 dental clinics in various primary schools, and on one large central school dental clinic (with 14 chairs) in Pegu Road. These clinics are expected to open during the following year. The Education Ministry gave valuable assistance by providing a dental clinic at each of the new integrated primary schools which were being built, as from 1961.

However, the most significant development in the Schools Division was the establishment of the Singapore Dental Nurses' Training School, which opened in January 1962. This Training School together with the School Dental Nurses Scheme marked an important step taken by Government toward the expansion of the dental services for school children.

HOSPITALS DIVISION

The Dental Clinic at the General Hospital continued to provide general and specialist dental treatment to out-patients attending the clinic, and ward cases of the Hospital. This is the main Government dental clinic for out-patients, and treatment for the poorer sections of the population is provided here at nominal charges. The teaching staff and students of the Dental School, University of Singapore work in conjunction with the Government Dental Officers at this clinic, and a comprehensive range of treatment is available to the public. Professor J. A. Jansen, Head of the Department of Dentistry of the University of Singapore, took charge of the clinic during the year, and there was an all-round improvement in the operation of the dental clinic. This was reflected by the improved returns of work recorded for 1962. The total patient-attendances reached 115,838, and there was a 30 per cent increase in the number of dentures fitted at the clinic.

The chronic sick in the Tan Tock Seng Hospital, Woodbridge Hospital, and Trafalgar Home were given dental attention by a dental officer at the dental clinics located in these institutions.

Inmates of the St. Andrew Orthopaedic Hospital continued to receive dental care in a mobile dental clinic which visited the hospital regularly.

Plans were drawn up towards the end of the year for the construction of a modern, well-equipped dental surgery as Thomson Road Hospital and another at Tan Tock Seng Hospital, and these clinics are scheduled to be completed in 1963.

MATERNAL AND CHILD HEALTH DIVISION

Pregnant and nursing mothers and their young children of pre-school age are given dental care at seven dental clinics located in the following centres:

Bukit Timah M. & C. H. Centre,
Ama Keng M. & C. H. Centre,
Mandai M. & C.H. Centre,
Yio Chu Kang M. & C. H. Centre,
Jalan Eunos M. & C. H. Centre,
Prinsep Street M. & C. H. Centre,
Bouna Vista Community Centre.

Apart from treating patients attending the above M. & C. H. Centres, dental officers at these dental clinics also provided treatment to patients who had been referred by other M. & C. H. Centres from various parts of the island. Dental treatment at these centres, as in the case of other medical services provided at Government M. & C. H. Clinics, is given free of charge.

MISCELLANEOUS DENTAL SERVICES

The Dental Branch continued to operate the Police Dental Clinic at the Central Police Station, and the dental officer attended to the rank and file of the Police Force to maintain the dental fitness of these men. He also visited the Changi and Outram Prisons regularly to treat inmates and detainees.

Inmates of the Opium Treatment Centre at St. John's Island were given dental attention by a dental officer who visited the island once a week.

During the year, three mobile dental clinics visited various homes and institutions, which included the Cheshire Home, the Blind School, Red Cross Home, the Spastic Children's Centre, Boys' Town and Lee Kuo Chuan Nursery. Regular visits were also paid to Gimson School, the Girls' Homecraft Centre, and Mt. Emily Girls' Home.

Under-privileged children attending various children's centres on the island received dental treatment at three dental clinics located at Geylang Community Centre, Siglap Community Centre and Buona Vista Community Centre.

PREVENTIVE DENTISTRY

The fluoridation scheme continued into its fifth year in 1962, and the Water Department maintained satisfactorily the fluoridation of the entire municipal water supply. The annual dental survey in connection with this scheme was carried out early in the year, and figures obtained from these annual dental surveys so far have been promising.

TRAINING OF STAFF

Two dental nurses, Miss P. Gonzales and Mrs. Lim Loo Cheong, who proceeded to New Zealand in 1961 under departmental scholarships to take up a Tutor Sisters' Course in Dental Nursing, returned to Singapore in August, having completed their training successfully.

A dental officer, Mr. Chua Sui Yeow, was awarded a Departmental Fellowship to take up a course in the United Kingdom leading to the F.D.S., R.C.S. (England). He will leave for London early in 1963.

A batch of 20 student dental nurses commenced training in January at the new Dental Nurses' Training School, and completed the first-year examinations of their two-year training course by December. Preparations are completed to receive the second batch of 20 student dental nurses early in 1963, when the Dental Nurses' Training School will be functioning fully, with 40 students in training. The first batch of trainees are expected to graduate by the end of 1963, and from then on, a steady stream of trained dental nurses at the rate of 20 per year will be available to staff the School Dental Service. Mr. Wong Hee Deong acted as Principal of this Training School.

During the year, the Department also maintained its training courses for student dental assistants, and probationer dental technicians.

DENTAL BOARD

The Inspecting Officer, Dental Board, made a total of 321 routine inspections on dental premises used by dentists registered in Division II of the Register, and 20 warning notices were subsequently issued to certain dentists for contraventions against the dental Ordinance. Three cases of illegal dental practice were reported to the Police, and this was followed by successful prosecution. The three unlicensed dentists concerned were fined $400, $1,000 and $500 respectively.

During 1962 there were 327 dentists on the register, of which 110 were fully-qualified dental surgeons.

1962 RETURNS OF WORK FOR GOVERNMENT DENTAL CLINICS

A table showing the return of work in respect of all Government dental clinics is at (Appendix 'A').

An annual report submitted by the Head of Department of Dentistry, Dental Clinic, General Hospital, is at (Appendix 'B').

Appendix A

DENTAL SERVICES, SINGAPORE

RETURN OF WORK

Period Covered 1962

	PATIENTS SEEN					TREATMENT GIVEN										PATIENTS
	NEW CASES					FILLINGS			EXTRACTIONS				APPLIANCES INSERTED			
	Examined	Requiring treatment	Refusing treatment	Re-examined	Total attendances	Silver Amalgam	Silicate	Other	Deciduous teeth	Permanent teeth	Scalings (per visit)	Dressings (per visit)	Ortho.	Dentures	Other treatment	Treatment completed
Schools Division																
School Dental Clinic—I. of H.	846	846	..	33,879	46,639	10,722	1,285	80	23,167	14,050	778	3,124	..	610	2,717	1,565
S.D.C., Tan Tock Seng Hospital	4,993	4,993	305	659	22,144	10,132	1,090	4	8,236	3,912	1,061	4,216	..	28	1,202	860
Dental Nurses Clinics ..	899	895	..	4,159	15,802	7,351	813	23	3,806	334	3,711	1,360	..	3	560	2,755
Mobile Dental Clinics ..	2,115	2,115	..	2,852	7,648	1,899	176	344	3,817	1,271	28	1,362	..	15	2,064	104
Tanjong Katong Dental Clinics	1,278	1,272	9	309	9,417	6,290	656	156	2,743	901	850	2,212	..	61	358	1,166
Labrador School Dental Clinic ..	470	470	34	..	1,120	229	28	..	771	205	4	95	..	3	118	20
Kaki Bukit School Dental Clinic	2,607	1,386	7	620	3,850	1,671	69	..	3,291	376	340	449	..	19	..	514
Telok Kurau and Guillemard Dental Clinic ..	1,027	1,027	19	..	3,309	1,331	12	..	2,654	370	1	536	..	..	129	296
Geylang Community Centre Dental Clinic ..	693	682	4	2,557	3,250	2,151	245	3	2,434	510	264	411	..	42	187	476
Siglap Community Centre Dental Clinic ..	411	347	35	60	4,330	1,545	206	664	3,239	694	222	61	..	20	59	228
Buona Vista Community Centre Dental Clinic ..	664	664	1	892	2,444	113	39	1	1,088	1,302	33	147	..	87	331	28
	16,003	14,697	414	45,987	119,953	43,434	4,619	1,275	55,246	23,925	7,292	13,973	..	888	7,725	8,012

Appendix A—*contd.*

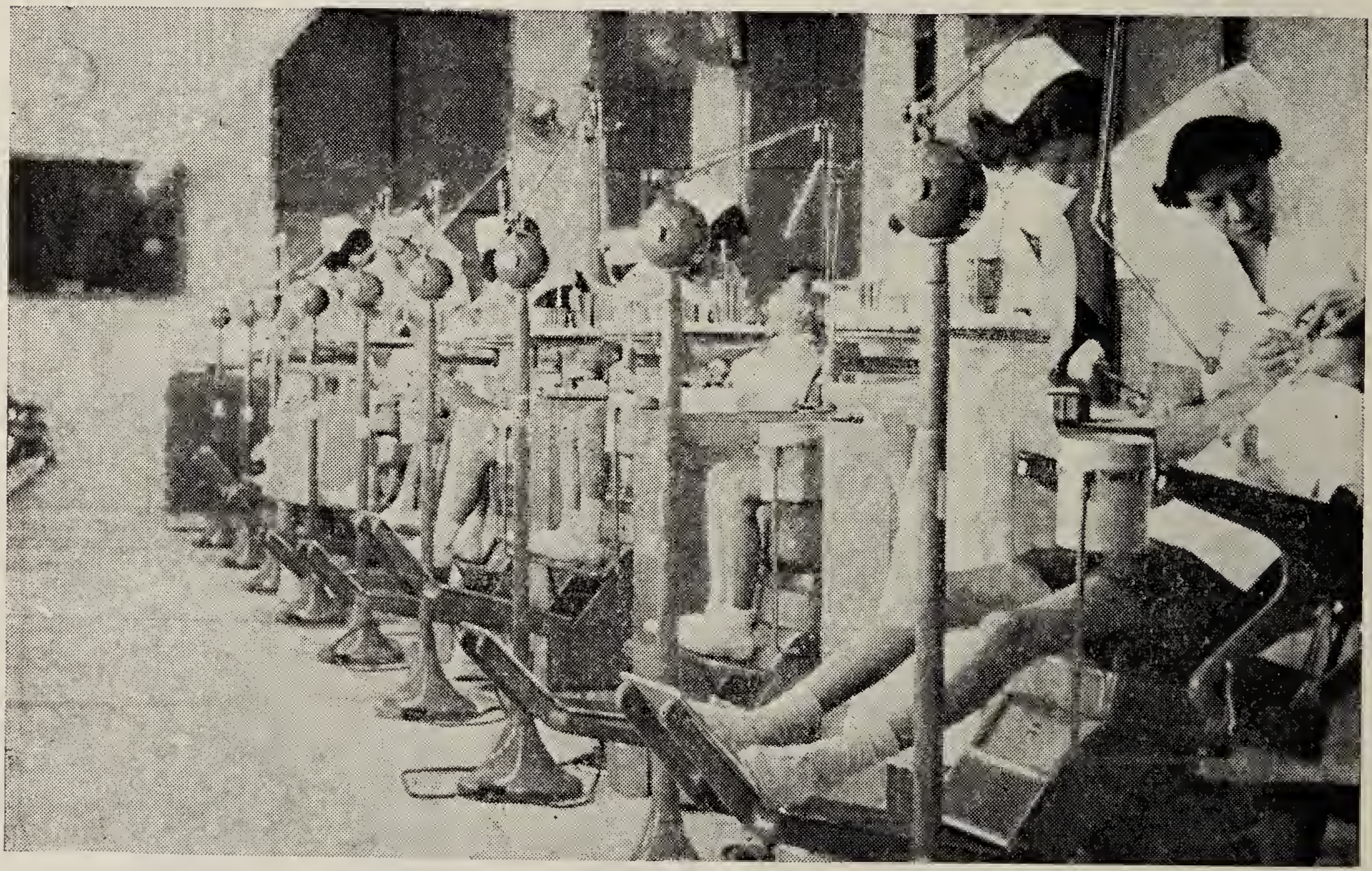
DENTAL SERVICES, SINGAPORE

RETURN OF WORK

Period Covered 1962

	PATIENTS SEEN					TREATMENT GIVEN										
	NEW CASES					FILLINGS			EXTRACTIONS				APPLIANCES			
	Examined	Requiring treatment	Refusing treatment	Re-examined	Total attendances	Silver Amalgam	Silicate	Other	Deciduous teeth	Permanent teeth	Scalngs i(per visit)	Dressings (per visit)	Ortho.	Dentures	Other treatment	Treatment completed
Brought forward ..	16,003	14,697	414	45,987	119,953	43,434	4,619	1,275	55,246	23,925	7,292	13,973	..	888	7,725	8,012
Hospitals Division																
Dental Clinic—General Hospital	40,082	40,082	..	75,756	115,838	4,593	1,652	1,006	40,400	45,744	..	24,982	..	2,941	10,300	..
Dental Clinics—Chronic Sick	1,778	1,778	46	4,679	6,449	691	279	213	158	5,309	61	104	..	182	969	2,035
M. and C.W. Division																
Bukit Timah and Ama Keng	1,977	1,977	..	..	9,678	608	152	..	3,359	6,143	166	806	..	588	1,550	370
Mandai and Yio Chu Kang	1,313	1,313	80	4,375	5,608	440	250	..	1,241	3,586	88	145	..	420	279	248
Jalan Eunos	1,247	1,247	2	6,223	7,501	815	272	..	1,461	4,287	237	145	..	507	1,184	298
Prinsep Street	914	914	..	3,655	4,569	638	184	21	35	3,885	147	157	..	319	1,064	239
Bukit Panjang	3,326	3,326	..	2,968	6,294	1,109	332	849	6,557	2,634	166	430	..	..	106	165
Miscellaneous																
Police Dental Clinic ..	754	754	28	3,816	4,615	830	117	3	..	2,587	180	308	..	135	844	131
St. John's Island ..	66	66	..	190	256	10	3	..	15	259	4	1	..	..	2	12
Pulau Bukom	210	210	..	..	523	141	8	..	344	118	8	49	..	..	53	..
Orthodontic Clinic, I/Health	402	402	..	4,208	4,605	124	37	46	264	370	12	246	399	10	400	69
Pulau Sudong ..	96	96	..	..	103	11	..	..	102	13	5	4	..	..	5	..
Total ..	68,168	66,862	570	151,857	285,992	53,444	7,905	3,413	109,182	98,860	8,366	41,350	399	5,990	24,481	11,579

Dental Nurses Training School in Singapore:
First Year students at work on dummies



Dental Nurses Training School in Singapore:
Second Year students under clinical training

DENTAL CLINIC, GENERAL HOSPITAL

The Dental Clinic, General Hospital, functions as a teaching school for the University of Singapore, an outpatient clinic for adults and children and a specialist unit for the General Hospital, Singapore.

Appendix "B"

ANNUAL REPORT OF DENTAL CLINIC, GENERAL HOSPITAL

Staff: Total = 99

Government: 63		*University* = 36	
Senior Registrar	1	Professors	2
Dental Officers	6	Senior Lectures	2
Housemen	3	Lecturers	9
Sister	1	Assistant Lecturer	1
Staff Nurses	2	Photographer	1
Dental Assistants	19	Laboratory Technicians	6
Dental Technicians	7	Dental Technicians	6
Dental Servants	19	X-Ray Technician	1
Hospital Assistant	1	Laboratory Servants	5
Clerks	4	Secretaries	2
		Clerk	1

During the year Mr. Poon Kit Yeong and Mr. Loke Sau Jun, dental officers joined the staff of the University and Mr. Choo Teck Chuan, Lecturer in Orthodontics resigned.

GENERAL

Table 64 sets out the details of treatments carried out during the year 1962. Table 65 gives comparative figures since 1951. Form MD. 2 for 1962 demonstrates distribution of cases on an ethnic basis. The total outpatient attendances reached an all-time high of 115,838 with a daily average of 390.03. The majority of cases sought relief of pain and extractions increased by than 3,000 mostly children. In the latter third of the year the anaesthetist provided further assistance enabling us to have one more general anaesthetic session each week for which we are grateful. The fall in conservative dentistry work is marked and is due to the small number of final year dental students. (There were no new admissions of students in 1957 due to a time change in the Academic year). Government staff continue to have varied and more interesting duties. One Government officer who is proceeding overseas on a fellowship has been posted to the Department for Oral Surgery and Oral Pathology experience and training and Government staff have been encouraged to participate in research with the University staff. The fall in periodontia cases is due to the resignation of the full-time teacher in that subject which is now taught by the Lecturer in Oral Pathology with the assistance of a newly-recruited assistant lecturer. Again the small number of final year students has contributed to the decrease in cases treated. The fourfold increase in orthodontia cases results from the appointment of a full-time lecturer in orthodontics. A record number of 2,941 dentures were issued and there is a heavier demand for various types of surgical and radiotherapeutic prostheses. There is an increase of oral surgical cases with many being referred to the Department from the Borneo territories.

There is an acute shortage of space in the clinic especially for clinical and waiting-room accommodation; expansion will no doubt make heavier demands on available floor space. It is quite clear that the building which was originally meant for a teaching school with a very limited intake of patients and comprising compartmentalised sections cannot adequately serve the needs of the people in the present circumstances despite the 50 feet extension completed in 1955. A new building with extended clinical space is urgently required in the hospital compound if it is to continue to serve the hospital also. All staff have been fully extended and have done their very best without complaint despite a shortage of dental assistants and technicians. An urgent consideration also is a ward for oral surgical cases as essential facilities continue to be increased. Excellent support and co-operation has been forthcoming from the various hospital units which have given us beds for our in-patients and provided consultant services. Government and University staff with the assistance of students have co-operated extremely well to produce satisfactory returns.

A very successful postgraduate course was conducted with full co-operation from the Chief Dental Officer and his staff and our thanks are hereby recorded.

REVENUE

This has increased by $5,184.35 from $29,849.75 to $35,034.10. The system of issuing receipts for small payments has tended to retard the work of clerk/interpreters in the Admissions office and consideration should be given to the re-introduction of payment stamps.

Table 63

GENERAL HOSPITAL—DENTAL CLINIC

Nationalities	NEW CASES				REPETITIONS			
	Male	Female	Child	Total	Male	Female	Child	Total
Europeans ..	8	3	7	18	66	44	11	121
Eurasians ..	52	33	21	106	205	217	92	514
Chinese ..	9,731	11,452	12,694	33,877	19,462	27,632	17,490	64,584
Indians ..	1,613	683	494	2,790	3,796	1,555	622	5,973
Malays ..	1,574	1,016	602	3,192	2,138	1,584	667	4,389
Javanese ..	57	18	2	77	37	7	4	48
Japanese ..	4	1	..	5	2	2	1	5
Others ..	9	5	3	17	66	45	11	122
Total ..	13,048	13,311	13,823	40,082	25,772	31,086	18,898	75,756

TABLE 64

1962	PATIENTS							EXTRACTIONS								FILLINGS															X-RAYS	
	FIRST VISITS							ADULTS				CHILDREN				ADULTS																
								Local and Regional Anaesthetic		Other General Anaesthetic		Local and Regional Anaesthetic		Other General Anaesthetic																		
	Govt. Servants	Others	Total	Average Daily Out-patient attendances	Percentage of Govt. Servants	Repeat Cases	Number of Out-patient attendances	Patients	Teeth	Patients	Teeth	Patients	Teeth	Patients	Teeth	Total of all Extraction cases	Amalgam	Synthetic Porcelain	Acrylics	Inlays	Crowns	Bridges	Gold Foil	Root Fillings	Total of all Fillings	Oral Surgery Operation	Periodontia	Orthodontia	Dressings	Number of Denture supplied	Number of Patients	Number of Films
	*			†													‡								§		¶	¶		‖		
January	55	2,862	2,917	348.8	1.88	5,811	8,728	2,801	3,503	2	6	1,056	1,573	408	1,400	4,267	440	157	15	74	9	.	13	51	759	105	124	16	2,072	268	537	1,390
February	55	2,564	2,619	318.95	2.1	4,398	7,017	2,415	2,984	5	9	906	1,335	338	1,179	3,664	203	130	7	7	3	..	..	20	370	106	65	9	1,743	142	380	670
March	69	3,206	3,275	381.69	2.04	6,649	9,924	3,024	3,769	..	..	1,292	1,881	371	1,414	4,687	384	144	5	28	.	2	..	48	611	150	181	48	2,218	206	692	1,365
April	62	3,275	3,337	439.27	1.86	6,327	9,664	2,714	3,430	2	4	1,678	2,337	293	1,011	4,687	455	178	6	36	6	5	.	51	737	116	154	39	2,421	286	516	1,051
May	62	2,994	3,056	379.05	2.03	6,041	9,097	2,990	3,774	2	14	1,465	2,078	267	916	4,724	412	107	3	10	3	.	.	24	559	119	108	37	2,214	214	537	1,047
June	62	3,057	3,119	398.32	1.98	6,759	9,878	3,327	4,059	..	..	1,359	1,870	335	1,162	5,021	427	147	4	23	6	1	3	49	660	157	136	108	2,218	201	553	1,154
July	58	3,367	3,425	391.73	1.69	6,760	10,185	3,416	4,064	..	..	1,424	1,967	377	1,316	5,217	478	142	1	20	..	1	10	50	702	121	111	88	2,107	271	485	996
August	83	3,647	3,730	400.44	2.23	6,281	10,011	3,307	4,078	..	..	1,839	2,667	314	1,194	5,460	371	100	3	2	1	1	1	35	514	113	88	106	1,833	299	456	881
September	62	3,391	3,453	403.58	1.74	6,636	10,089	3,214	3,961	4	7	1,428	1,937	439	1,538	5,095	401	117	2	8	3	..	3	44	578	117	137	180	2,117	255	612	1,825
October	75	3,593	3,668	400.07	2.05	6,734	10,402	3,431	4,129	..	..	1,633	2,372	537	1,986	5,601	315	116	6	20	3	..	7	36	503	113	165	67	1,894	285	496	1,096
November	75	3,673	3,748	380.46	2.0	6,144	9,892	3,452	4,037	1	7	1,698	2,239	414	1,750	5,565	318	128	3	15	3	1	4	72	544	104	205	72	2,055	260	558	1,486
December	68	3,667	3,735	438.04	1.82	7,216	10,951	3,055	3,909	..	..	1,771	2,723	340	1,555	5,166	389	186	..	37	3	..	8	91	714	117	189	108	2,090	254	499	1,244
Total ..	786	39,296	40,082	390.03	1.95	75,756	115,838	37,146	45,697	16	47	17,549	24,979	4,433	15,421	59,144	4,593	1,652	55	280	40	11	49	571	7,251	1,438	1,663	878	24,982	2,941	6,321	14,205

* Government Servants include their wives and children.

† In calculating the Daily Average Out-Patient Attendances, Allowance has been made for Sundays and Public Holidays.

‡ These figures include Fillings done in deciduous teeth as well.

§ In this column only Permanent Fillings are included. All Fillings of a Temporary Nature are included in the 'Dressings Column. Fillings include all Crowns and Bridges.

¶ These figures represent the number of Attendances only, and not cases completed.

‖ The figures in this column include such items as Repairs and Small Partial Dentures, and also Orthodontic Appliances.

Table 65

Year	Total New Cases	Total Out-patients Attendances	Daily Average	Extractions	Oral Surgery Operations	Fillings	Dressings	Dentures	X-rays	Revenue	
										$	c.
1951	7,149	29,168	106.06	22,973	..	3,490	12,556	1,457	3,571	29,125	65
1952	10,054	37,988	138.11	27,933	..	5,913	10,223	1,223	4,498	31,126	67
1953	14,444	50,449	183.42	51,972	..	6,006	31,604	1,726	6,298	44,535	59
1954	21,525	63,469	231.20	71,715	..	6,859	44,641	2,092	6,596	53,842	84
1955	27,895	82,107	278.74	83,392	847	6,039	52,201	1,873	6,761	34,738	85
1956	32,547	99,004	334.47	82,175	898	6,741	63,338	2,348	9,137	36,341	94
1957	36,508	107,700	362.05	67,785	646	9,048	64,018	2,304	10,683	32,068	65
1958	25,770	87,293	291.03	53,701	755	5,277	23,315	2,025	15,498	21,954	50
1959	33,958	101,754	340.1	61,826	887	7,660	20,314	1,638	16,610	22,368	10
1960	42,948	112,211	375.87	83,259	978	7,165	18,855	1,809	17,696	25,077	25
1961	39,242	110,687	370.66	56,062	1,131	10,875	16,787	2,247	13,103	29,849	75
1962	40,082	115,838	390.03	59,144	1,438	7,251	24,982	2,941	14,205	35,034	10

PART III

THE HOSPITALS DIVISION

Chapter Thirteen

INTRODUCTION

The Hospitals Division was constituted on 1st January, 1962. This was part of the re-organisation of the Ministry in which the Hospitals and Health Divisions were separated out from the Ministry Headquarters.

The re-organisation was necessary to fit in the City Council Health departments into the Ministry. But the trend towards the formation of these two major divisions had begun several years ago.

For many years the hospital and outpatient services had been collectively known as the Hospitals Division. In 1957 the post of Assistant Director of Medical Services (Hospitals) was created. To this post was given the functions of the administration of hospitals previously performed by a Chief Medical Officer who had also the charge of the General Hospital. The abolition of the Hospitals Board in February 1960 was the next definitive step which culminated in the formation of the Hospitals Division.

The aim of the Division is to manage an efficient hospitals and outpatient service; to centralise, where possible, the administration of the institutions so that the administration load on each might be reduced. Its function on policy making is chiefly advisory: to initiate and present, after all the basic information has been collected and considered, plans for development, for organisation of the services for employment of staff; training programmes; and for expenditure. It will be required to set standards on procedures, impose efficiency controls and co-ordinate the work done.

DEVELOPMENT

Outpatient services: Extensions to the Kallang Outpatient Dispensary were completed on March 1962. The extensions provide accommodation for additional patients and for two more doctors. With space for six doctors, the dispensary is the largest outside the outpatient dispensary at the General Hospital.

A small outpatient dispensary was opened at Somapah Road. This was built by the Housing and Development Board.

At Tan Tock Seng Hospital, the Occupational Therapy Department moved into its new building on 1st April, 1962.

A new boiler house was completed at the General Hospital and at Kandang Kerbau Hospital the alterations and extensions to the dispensary and bulk store were completed.

Work began on the extensions to the Thomson Road Hospital to provide theatre suites, X-ray department, casualty and outpatient sections. When this is completed at the end of 1963 the hospital will be a complete general hospital.

Below is a list of hospitals and the beds available in each. The beds available at the Kandang Kerbau Maternity Hospital, the Tan Tock Seng Hospital for tuberculosis, and the Chronic Sick Unit were increased by opening previously vacant wards (unstaffed beds).

	Beds Available
Government Hospitals	
General Hospital	1,231
Thomson Road Hospital (District General Hospital)	396 (180 staffed)
Kandang Kerbau Hospital (Maternity)	443
Woodbridge Hospital (Mental)	1,869
Mental Defective Unit at Woodbridge Hospital ...	45
Chronic Sick Unit at Woodbridge Hospital ...	120 (35 staffed)
Tan Tock Seng Hospital (Tuberculosis) ...	1,250
Middle Road Hospital (Venereal Diseases) ...	60
Middleton Hospital (Infectious Diseases) ...	250
Trafalgar Home (Leprosy)	1,023
St. Andrew's Orthopaedic Hospital	120
Private Hospitals	
Gleneagles (General Hospital)	80
Mount Alvernia Hospital (General Hospital) ...	82
Youngberg Memorial Hospital (General Hospital) ...	68
St. Andrew's Mission Hospital (for children) ...	60
Kwong Wai Siew Hospital (Cantonese Hospital) ...	436
Private and Charitable Homes	
Red Cross Crippled Children's Home	40
Singapore Children's Society's Convalescent Home	48
St. John's Home for the Aged	50
Cheshire Home	42
Little Sisters of the Poor Home for the Aged ...	32
Hylam Sick Bay (Community Home for Hainanese only)	38
Khek Sick Bay (Community Home for Khek only)	40

Table 66

BEDS AND SERVICES

Number of beds available, principal types, on 31st December, 1962

(The figures exclude beds in Institutional and Departmental Hospitals and Charitable Homes)

	1960	1961	1962
Total Hospital Beds	7,232	7,539	7,543
per 1,000 population ...	4.4	4.5	4.2
Government Hospital Beds ...	6,582	6,807	6,807
per 1,000 population ...	4	4	3.9
Private Hospital Beds ...	605	732	736
per 1,000 population ...	.4	.4	.42
General Beds (Government) ...	1,627	1,647	1,629
per 1,000 population ...	1	1	.94
Maternity Beds	390	438	443
per 1,000 population ...	.24	.26	.25
Psychiatric Beds	1,869	1,869	1,869
per 1,000 population ...	1.1	1.1	1.08
Tuberculosis Beds	1,200	1,234	1,250
per 1,000 population ...	.73	.73	.73

The record of work done is perhaps better summarised in the following tables on the turnover of beds and the average length of stay of patients in the principal hospitals.

Table 67

IN-PATIENTS IN HOSPITALS, 1962

The following table shows the daily average number of patients, the number of patients admitted during the year, the number of deaths and the death rate per hundred treated.

Hospitals	Average No. of Patients	Admissions during the year	Discharges	Deaths	Mortality per cent
General Hospital	1,029.51	44,661	42,163	2,466	5.40
Thomson Road Hospital	149.00	2,008	1,776	185	8.72
Kandang Kerbau Hospital (Maternity)	399.00	49,773	49,626	85	0.02
Woodbridge Hospital (including Mental Defective Unit) and Chronic Unit	2,738.09	2,771	2,100	98	34.16
Tan Tock Seng Hospital (Tuberculosis)	1,109.66	3,985	3,581	383	7.52
Middle Road Hospital (Venereal Diseases)	33.00	1,305	1,277	1	0.08
Middleton Hospital (Infectious Diseases)	167.00	4,936	4,914	33	0.65
Trafalgar Home (Leprosy)	685.00	288	337	..	..
St. Andrew's Orthopaedic Hospital	96.18	271	275	..	..

Table 68

CRUDE BED TURNOVER IN PRINCIPAL HOSPITALS

Hospitals	1955	1956	1957	1958	1959	1960	1961	1962
General Hospital	29.215	26.825	29.207	29.937	33.244	33.960	33.652	37.063
Kandang Kerbau Hospital ..	94.446	102.759	114.427	125.826	141.569	123.774	112.308	107.396
Woodbridge Hospital	1.861	2.051	1.970	1.719	1.972	2.240	2.455	2.713
Tan Tock Seng Hospital ..	4.521	2.639	3.317	3.444	3.858	3.652	3.714	4.076
Middle Road Hospital	21.646	21.000	20.923	17.723	21.308	19.896	19.820	22.067
Middleton Hospital	17.130	15.708	15.088	15.120	14.564	20.488	16.464	20.348
Trafalgar Home	1.108	1.153	1.206	1.162	1.217	1.126	965	0.971
St. Andrew's Orthopaedic Hospital	2.108	2.783	2.917	2.092	2.017	2.141	3.375	2.958

Table 69

CRUDE PATIENT BED DAYS

Hospitals	1955	1956	1957	1958	1959	1960	1961	1962
General Hospital	12.493	13.641	12.749	12.192	10.979	10.777	10.847	9.848
Kandang Kerbau Hospital ..	3.529	3.561	3.189	2.901	2.579	2.953	3.250	3.398
Woodbridge Hospital	196.119	178.440	189.997	212.255	186.702	163.376	148.624	134.527
Tan Tock Seng Hospital ..	80.729	138.695	110.051	105.396	94.814	100.228	98.257	89.549
Middle Road Hospital	16.862	17.429	17.445	20.595	17.129	18.394	18.416	16.541
Middleton Hospital	21.308	23.549	24.483	24.114	25.062	17.864	22.170	17.938
Trafalgar Home	329.375	317.405	302.767	314.041	299.916	325.016	377.930	376.027
St. Andrew's Orthopaedic Hospital	173.123	131.497	125.143	174.502	180.992	170.891	108.148	123.380

OUTPATIENT SERVICES

The following tables are a record of attendances at outpatient departments. The upward trend in attendances continues. This is shown by the increases in total attendances and in the rate of attendances (given as a proportion of attendances for every 1,000 of population. The population being taken as 1,732,800 at mid-year, 1962).

Table 70

ATTENDANCES AT OUTPATIENT DISPENSARIES

Dispensaries.	1962	Proportion per 1,000 of population.
Outdoor Dispensaries	1,276,745	735
Hospitals Outpatient Sections ...	1,077,384	620
City Council Dispensaries	390,620	222
Travelling Dispensaries	195,967	113
Total ...	2,940,716	1,690

Table 71

OUTPATIENT ATTENDANCES AT SPECIALISED CLINICS

Clinics.	1962	Proportion per 1,000 of population.
General Hospital	434,349	251
Thomson Road Hospital	8,874	5.1
Kandang Kerbau Hospital	189,552	109
Woodbridge Hospital	2,426	1.4
Tan Tock Seng Hospital	478,701	273
Middle Road Hospital	197,594	114
Trafalgar Home	11,345	6.5
Total ...	1,222,841	760.0
Casualty Department, General Hospital	124,014	71.5

Table 72

NURSING STAFF IN GOVERNMENT HOSPITALS AND OUTPATIENT SERVICES ON 31st DECEMBER, 1962

	Approved Establishment	Effective Personnel
Matron, Grade I	4	4
Matron, Grade II	12	10
Sisters	201	120
Staff Nurses and Student Nurses ...	1,206	1,054
Assistant Nurses	727	643
Staff Midwives	186	123
Pupil Midwives	234	188

Table 73

ANCILLARY STAFF IN GOVERNMENT HOSPITALS AND OUTPATIENT SERVICES ON 31st DECEMBER, 1962

	Approved Establishment	Effective Personnel
Radiographers	30	27
Physiotherapists	20	15
Occupational Therapists	13	10
Almoners	32	21
Dietitians	7	4

Table 74

STAFF

MEDICAL OFFICER STAFF IN GOVERNMENT HOSPITALS AND OUTPATIENT SERVICES

	Grade 'E'		Grade 'G'		Senior Registrar		Medical Officer	
——	Approved Esta·blishment 1962	Effective Per-sonnel 1962	Approved Esta-blishment 1962	Effective Per-sonnel 1962	Approved Esta-blishment 1962	Effective Per-sonnel 1962	Approved Esta-blishment 1962	Effective Per-sonnel 1962
Medical Superintendents ..	2	..	3	3	..	..	..	..
Surgeons—								
General	1	1	3	2	5	4	..	..
Orthopaedic	1	1	1	1	2	1	..	..
Ear, Nose and Throat ..	..	..	1	1	1	..	..	..
Ophthalmic	..	..	2	1	1	1	..	..
Obstetrician and Gynacologist	1	1	2	1	3	3	..	..
Physician—	1	1	4	3	6	4	..	..
Paediatrician	1	..	2	2	2	1	..	..
Chest Physician.. ..	1	1	4	3	4	1	..	..
Psychiatrist	1	1	1	1	2	1	..	..
Leprology	..	..	1	1	1	..	..	..
Venerology	..	..	1	1	..	..	..	..
Pathologist	1	..	1	1	2	1	..	..
Radiologist	1	1	2	1	1	..	..	..
Radiotherapist	..	..	1	1	1	1	..	..
Anaesthetist	1	1	1	1	1	2	..	..
General Duty Medical Officer..	..	..	..	..	..	..	213	169
	12	8	30	24	32	21	213	169

Chapter Fourteen

THE GENERAL HOSPITAL

In this hospital and its environs are concentrated some of the most important of the hospital services in the State. The hospital itself is a general service hospital, a teaching hospital and in some respects, a specialised hospital.

The hospital has clinical departments in medicine, surgery, orthopædic surgery, ear, nose and throat and ophthalmic surgery. Its departments of radiology and radiotherapy provide a central specialised service for all the other hospitals.

Its ancillary departments, the Medical-Social Service (Almoners), the Dietary Service in Physiotherapy and Occupational Therapy also are the headquarters of these hospital services.

The hospital is a teaching hospital for the training of medical students in their clinical years, and dental students are trained in the School of Dentistry and the dental clinic.

A School of Nursing is within the hospital. Training of laboratory technicians and of dispensing assistants are also undertaken largely in this hospital.

Situated within this hospital are the departments of the Outpatient Services and the Blood Transfusion Services and the Pathological Services.

SUMMARY ACTIVITY

Admissions and discharges of patients to the hospital are given in the following table.

Table 75

ADMISSIONS AND DISCHARGES

Hospital	Admitted during the year 1962	Discharged	Transferred	Absconded	Died	Total	Percentage of deaths to total treated	No. of beds	Average daily number of patients
1st and 2nd Class	3,145	3,043	..	..	110	3,153	3.35	190	139.00
Children ..	15,155	14,218	201	..	718	15,137	4.65	358	281.66
3rd Class ..	26,361	24,372	308	21	1,638	26,339	6.08	683	608.85
Total ..	44,661	41,633	509	21	2,466	44,629	5.40	1,231	1,029.51

The numbers of in-patients treated represents an increase of 10 per cent over 1961, but is a smaller rate of increase compared to rates of increases recorded in previous years which were at rates of about 11 per cent.

Attendances at out-patient clinics of the units also show smaller increases, being about 6 per cent. The smaller increases suggest that the saturation point of work has been reached in the activities of the General Hospital.

It might be noted that in spite of the larger number of patients treated the percentage number of deaths (5.4) is the lowest on record.

CLINICAL UNITS

The following table lists the clinical units of the hospital:

Table 76

UNITS IN GENERAL HOSPITAL

Unit	Head of Unit
Medical Unit I	Professor G. A. Ransome, M.R.C.S., F.R.C.P.
Medical Unit II	Professor E. S. Monteiro, M.D., F.R.C.P., F.R.F.P. & S., D.C.H.
Pædiatric Unit	Dr. Quah Quee Guan, L.M.S. (Singapore), D.C.H., M.R.C.P.E.
Surgical Unit 'A'	Professor G. S. Yeoh, F.R.C.S., M.A., M.B., B. Chir.
Surgical Unit 'B'	Mr. Yahya Cohen, F.R.C.S., F.R.A.C.S.
Surgical Unit 'C' Orthopædic	Professor D. R. Gunn, M.B. ch.B., M.ch. Orth., F.R.C.S. Ed.
Surgical Unit 'O' Orthopædic	Mr. D. W. C. Gawne, F.R.C.S.
Ear, Nose and Throat	Dr. Seow Li Jin, M.B., B.S., F.R.C.S.
Ophthalmic Unit	Dr. Robert Loh, M.B., B.S., D.O.M.S., F.R.C.S.

A summary of the activity of the units for the year is given in the following table:

Generally the work done in the units as regards admissions are very uniform (except for the Orthopædic 'O' where the demands for admissions appear to be half that of the other Orthopædic Unit 'C'). The Units also report on the heavy pressures on their beds making it necessary to make a more rapid turn-over of patients.

Table 77

STATISTICS SHOWING UNIT ACTIVITY FOR THE YEAR 1962

——	Medical Unit I	Medical Unit II	Paediatric Unit	Surgical Unit 'A'	Surgical Unit 'B'	Orthopaedic Surgical Unit 'C'	Orthopaedic Surgical Unit 'O'	Ear, Nose and Throat Unit	Ophthalmic Unit
Discharges and Deaths	4,950	5,782	11,901	7,213	7,668	2,689	1,372	1,319	1,663
Total Attendances O.P.	37,310	39,812	51,712	32,561	86,494	60,365	52,451	31,629	47,015
Number of Beds allocated	140	173	254	189	162	100	60	60	93
Average	121	138	185	154	157	100	73	40	76
Bed Occupancy (Based on beds allocated)	86%	79%	73%	81%	97%	100%	122%	67%	82%
Turnover per bed ..	17 pts.	17 pts.	23 pts.	20 pts.	24 pts.	14 pts.	12 pts.	11 pts.	9 pts.
Crude average length of stay	8.5 days	8 days	6 days	7.5 days	7 days	13.5 days	19 days	11 days	15.5 days
Deaths	568	652	646	247	237	60	10	38	8
Percentage of Deaths to In-patients total treated ..	11.5%	11.31%	5.42%	3.42%	3.14%	2.20%	.72%	2.87%	.48%

OUT-PATIENT CLINICS

The out-patient clinics are those run by the units. They are essentially specialised clinics for the follow-up of special cases and where cases referred from other departments and doctors are seen.

Table 78

OUT-PATIENTS FOR 1962

	New Cases	Repeats	Total
Surgical O.P.D. 'A' Unit	16,452	16,109	32,561
Surgical O.P.D. 'B' Unit	28,949	30,981	59,930
Orthopædic O.P.D. 'C' Unit	10,379	26,227	36,606
Orthopædic O.P.D. 'O' Unit	9,002	24,823	33,825
Ear, Nose and Throat Department O.P.D.	7,852	18,978	26,830
Eye Clinic	9,978	37,037	47,015
Medical O.P.D. Unit I	648	27,008	27,656
Medical O.P.D. Unit II	2,177	23,917	26,094
Pædiatric O.P.D.	4,851	41,809	46,660

MEDICAL UNITS

The summary of the activity of the Units has been given previously. There remains to report the important research done in the Units.

MEDICAL UNIT I

Research.—As a continuation of the studies on eosinophilic lung, in conjunction with the Department of Tropical Medicine and Public Health of Tulane University, investigations on the serology and immunology of the disease are in progress. Agar-gel diffusion studies, with sera from patients, have revealed a complex of the antigen-antibody systems non-specific to several orders of nematodes. None of the nematodes tested to date, however, can be said to be implicated as etiological agents by the results of the above tests. Further evaluation of the complement fixation test, used as a diagnostic aid in cases of eosinophilic lung, revealed that the antigenic moiety responsible for binding antibody and complement is non-specific to nematodes, trematodes and cestodes. Whether the same antigenic moiety may be extracted from tissues of other animals is still under study. An indirect tanned cell hemagglutination test is in use at present with various fractions of helminth tissue. However, it is not yet clear whether the increased sensitivity of this test will provide an identification of the etiological agent of eosinophilic lung. Lung tissue obtained by biopsy and at necropsy is being examined for parasites.

In 1959, the occurrance of hypertension in two children consequent on stenosis of the orifices of both renal arteries caused by localised arteritis of the abdominal aorta was reported. The histological appearance of the aorta indicated that this was a variant of Takayashu's Syndrome. On the basis of a larger series of cases it is postulated that primary arteritis of the aorta is a single clinico-pathological entity of which Takayashu's Syndrome is only a part. Different segments of the aorta may be affected involving the orifices of the large and smaller branches resulting in a variety of symptoms complexes. In the present series, the chief mode of presentation was hypertension resulting from renal artery stenosis which was relived by surgical intervention.

MEDICAL UNIT II

The study of cerebrovascular accidents admitted into the unit continued. The study is nearly completed and will be published in 1963. The study has spawned further inquiry, an experimental study of the circulation of the brain a project shared with the Department of Pharmacology.

The other work has chiefly been in drug trials. The evaluation of "Endoxan" as a chemotherapeutic agent in malignant disease; "Phenothiazine" in epilepsy; "Aceto-Hexamide" in the treatment of diabetes mellitus; "Bretylium Tosylate" and "Guanethidine" in the treatment of hypertension and "Oxyphenyclimine" ("Daricon") in peptic ulcers.

PÆDIATRIC UNIT

This is the last report of the Pædiatric Unit as from next year it will be divided into two units one the Government Unit and the other the University Unit. In this re-organisation, the 20 beds which have been set aside for pædiatric surgical cases will be taken back by Surgical Unit 'A'.

Admissions continue to show a progressive rise and it is worth noting that re-admissions totalled nearly half of these. This probably reflects the high morbidity resulting from the inadequate previous hospitalisation. The other evidence of the result of having to discharge patients earlier to make room for others is the increase in the attendances at the follow-up clinics.

Gastro-enteritis and bronchopneumonias continue to be the chief causes of admissions and deaths. Respiratory tract infection, as a whole, form the largest cause of admission as, besides the penumonias, a large number are for asthmatic bronchitis. Febrile convulsions also form a large proportion of admissions being another common manifestation of this age group.

The incidence of leukæmia showed an increase but there is uncertainty whether this is real, as is observed in other countries, or apparent due to the larger overall attendances of children at all the Government institutions.

The percentage mortality of 5.6 per cent was lower than the previous year. Of the total deaths of 620, nearly half, 288 occurred within 24 hours of admissions which shows that cases are admitted in serious condition.

Table 79

ADMISSIONS AND DEATHS

	1958	1959	1960	1961	1962
Total number of admissions	9,697	10,517	10,712	9,862	11,095
Total number of deaths	1,082	893	817	606	620
Total number of deaths within 24 hours	537	521	482	351	288
Total number of deaths against admissions (in percentage)	11.16	8.49	7.63	6.1	5.6

Table 80

ATTENDANCES AT OUT-PATIENT CLINICS

	1961	1962
New Cases	4,680	4,851
Repeat Cases	39,754	41,809
Total ...	44,434	46,660

SURGICAL UNITS

The following is a summary of the operations done in the surgical units of the General Hospital.

Table 81

OPERATIONS FOR THE YEAR, 1962

Month	SURGICAL "A" UNIT			SURGICAL "B" UNIT			SURGICAL "C" UNIT			SURGICAL "O" UNIT			OPHTHALMIC UNIT			EAR, NOSE AND THROAT		
	Major	Minor	Total	Major	Minor	Total	Major	Minor	Total	Major	Minor	Total	Major	Minor	Total	Major	Minor	Total
January	265	565	830	217	450	667	74	538	612	50	835	885	132	626	758	100	296	396
February ..	217	534	751	198	499	697	81	777	858	63	845	908	80	420	500	105	213	318
March	248	560	808	195	525	720	103	1,008	1,111	73	1,036	1,109	129	586	715	107	304	411
April	233	506	739	203	474	677	98	840	938	84	856	940	127	514	641	123	218	341
May	241	569	810	264	562	826	104	797	901	82	695	777	128	572	700	125	274	399
June	230	655	885	252	676	928	89	860	949	88	921	1,009	145	578	723	129	272	401
July	275	669	944	274	617	891	107	1,264	1,371	97	724	821	122	674	796	136	269	405
August	260	631	891	225	632	857	111	1,145	1,256	87	1,028	1,115	135	586	721	153	287	440
September ..	241	585	826	229	572	801	100	1,086	1,186	81	948	1,029	132	565	697	121	241	362
October	292	667	959	264	625	889	119	1,060	1,179	131	899	1,030	145	656	801	142	267	409
November ..	256	666	922	249	602	851	98	990	1,088	106	922	1,028	128	597	725	126	208	334
December ..	252	621	873	216	536	752	95	959	1,054	90	950	1,040	146	541	687	145	269	414
Total ..	3,010	7,228	10,238	2,786	6,770	9,556	1,179	11,324	12,503	1,032	10,659	11,691	1,549	6,915	8,464	1,512	3,118	4,630

The year was marked by some major losses of surgeons. Mr. Tseng Yuen Lin, Senior Registrar, and surgeon of great promise died in September. In November, Professor Yeoh Ghim Seng, the Head of Surgical Unit 'A', Mr. E. M. T. Lu, Senior Registrar and Mr. Yeoh Kian Seng, Lecturer, resigned, and Mr. Harrison Levy left service as surgeon in Surgical Unit 'B' in April after completing his contract.

During the year, Mr. Yahya Cohen, the Head of Surgical Unit 'B' went on a study tour of 4½ months of surgical centres in the United States and the Hadassah Medical School of the Hebrew University in Jerusalem. Mr. Yong Nen Khiong, Lecturer, went on a year's study leave to America for training in cardiovascular surgery.

On the credit side, two surgeons, Mr. B. K. Sen and Mrs. Diana Ip, returned after successfully obtaining their higher surgical qualifications in the United Kingdom.

In spite of all the changes and shortages of senior staff members, an increase in work generally has been recorded. The heaviest loads being on the out-patient clinics. A considerable part or the time of officers are being deployed towards dealing with out-patients and referrals. Waiting lists for elective surgery are almost useless as almost all the time of the surgeons; the beds and theatres are taken up by more urgent surgical cases.

ORTHOPÆDIC UNITS

Approval has yet to be given to complete the development of the orthopædic units. This is a plan for extensions and renovations to double the out-patients section and operation theatres and to increase the beds available by 65. This plan was to provide separate facilities for each of the two orthopædic units which now share accommodation which was meant for only one surgical unit. For lack of sufficient space, the work in the units is limited and they are working at half their potential capacity.

The department alone has the responsibility for care of every casualty requiring hospital treatment. The number of casualties now number over 340 a day, and these numbers have been increasing at rates of 12 per cent every year. It is generally estimated that the bed requirement for these cases is 12 per cent of total hospital beds. For Singapore this would be 250 beds — which is 160 beds more than provided now.

Overcrowding in the outpatient clinics and wards is therefore not surprising. Bed occupancy is 110 per cent and average length of stay is 16 days. Conditions are made worse as the state of repairs of the buildings are bad, no maintenance having been carried out over the years as it was anticipated that the renovations would be put in hand soon.

The figures for the numbers of patients treated in the wards, and the operations performed have been given previously. The outpatient attendances for the year were as follows:

	'C' Unit	'O' Unit
New Cases	10,379	9,002
Repeats	26,227	24,823

ST. ANDREW'S ORTHOPÆDIC HOSPITAL

This hospital has accommodation for 120 beds for children convalescing from, and under treatment for, diseases of the bone and joints. The chief diseases being tuberculosis of the spine and of joints, although the incidence is decreasing; and post-paralytic poliomyelitis. A few patients were suffering from osteomyelitis and congenital malformation and mascular dystrophies.

The record of the admissions and discharges is given in the following table:

Table 82

ADMISSIONS AND DISCHARGES

—	Admitted	Discharged	Transferred	Absconded	Died	Total	Percentage of deaths to total treated	No. of beds	Average daily number of patients
Males	154	70	76	..	..	146	..	60	54.73
Females	117	75	54	..	..	129	..	60	41.45
Total ..	271	145	130	..	..	275	..	120	96.18

EAR, NOSE AND THROAT DEPARTMENT

There has been an increase in every sphere of activity in the unit. The figures on the work done are as follows, and for comparison the figures for the previous year are also given.

Table 83

	1961	1962
In-patients	1,189	1,274
Out-patients:		
New cases	7,590	7,852
Repeats	15,928	18,978
Emergency operations	114	304

Because of the increase of patients, the beds for children and adult males have been at a premium.

OPHTHALMIC DEPARTMENT

The staff of the department was improved with the return of the Government Fellow, Mr. A. Lim who had succeeded in qualifying for the F.R.C.S. and Dr. Lee Sui Hoong and the appointment of Dr. Thean Lip Hing each with the D.O.

Work in the unit, as has been the experience throughout the service, has increased. Operations performed, for example, were 25 per cent more than the previous year. Outpatients numbered 9,978 new cases, and 37,037 repeats of "old" cases.

ANÆSTHETIC DEPARTMENT

The anæsthetists in the department at the end of the year numbered 13. Two others who were part-time employed are on the staff. Two Government Fellows returned on successfully training and qualifying in the U.K. but this gain was partly offset by the resignation of the specialist anæsthetist, Dr. George Tay.

The numbers of anæsthetics administered were as follows:

Table 84

ANALYSIS OF ANAESTHETICS ADMINISTERED

Unit	General	Spinal	Local	Total	Major	Minor
"A" Surgical Theatre ..	3,212	816	3,104	7,132	3,010	4,122
"B" Surgical Theatre ..	2,820	845	2,810	6,475	2,731	3,744
Orthopaedic Theatres ..	2,311	86	5,370	7,767	2,101	5,666
Ear, Nose and Throat ..	1,112	..	2,895	4,007	1,512	2,495
Eye Department	303	..	..	303	..	..
Kandang Kerbau Maternity Hospital	3,931	319	399	4,649	1,973	2,676
Dental Clinic	4,487	..	..	4,487	54	4,433
X-Ray Department	28	..	..	28	..	..

DIETETIC DEPARTMENT

The work of the dietitians was extended in November 1962 to cover the catering services at Tan Tock Seng Hospital as well as General Hospital and Woodbridge Hospital (full time) and Kandang Kerbau and Thomson Road Hospitals (part time).

The average number and cost of diets at General Hospital is as follows:

	Paying A	Paying B	Free	Children
Average Daily cost ...	$3.12	$2.69	$1.16	$0.90
Average Daily number ...	36	100	610	176

PHYSIOTHERAPY DEPARTMENT

The shortage of physiotherapists continued. There were only 14 of a possible 20 physiotherapists in the department. As a consequence the St. Andrew's Orthopædic Hospital and the Red Cross Home for Crippled Children were deprived of the visit of the physiotherapist. The position will improve when the four pupils return to the department in 1964.

OCCUPATIONAL THERAPY DEPARTMENT

The department is fortunate that its posts of Occupational Therapists are fully established. As a result, its work was extended to the St. Andrew's Orthopædic Hospital, the Cheshire Home for the handicapped and the Spastic Children's Centre.

The function of the department is the training of patients in handicrafts. This helps them in regaining muscle strength, manual dexterity and to pass away their time. The result is the production of some good quality articles. Sales and exhibitions of these articles brought in $4,837.30 in 1962. Total sales from other hospital departments were:

Thomson Road Hospital	$2,680.70
Woodbridge Hospital	$2,158.65
Trafalgar Home	$8,679.15

DENTAL CLINIC

The Dental Clinic, General Hospital, functions as a teaching school for the University of Singapore, an out-patient clinic for adults and children and a specialist unit for the General Hospital, Singapore.

Staff.—The dental surgeons number 24 distributed as follows: Senior Registrar 1, dental officers 6, housemen 3 on the Government side and on the University side there were 2 professors, 2 senior lecturers, 9 lecturers, and 1 assistant lecturer.

The out-patient attendances was an all-time high of 115,838 with a daily average of 390.

The majority of cases sought relief of pain. The fourfold increase in Orthodontia cases results from the appointment of a full-time lecturer in Orthodontics. A record number of 2,941 dentures have been issued and there is a heavier demand for various types of surgical and radiotherapeutic prostheses. There is an increase of oral surgical cases with many being referred to the Department from the Borneo territories.

Revenue.—This has increased by $5,184.35 from $29,849.75 to $35,034.10

MEDICAL RECORDS DEPARTMENT

The re-organisation of the service continued and the assistance of a W.H.O. advisor in Hospital Records was obtained again in 1962.

The line that will have to be taken is now quite clear, but implementation will be slow as it will be difficult to change well-established systems. One of the chief problems is the need for a Central Records Registry. This will require not only changes in the existing system where each Unit maintains its own records, but also new accommodation must be found. A step in this direction was the extension of the "one number" system to both of the surgical units in 1962.

The other advance was the introduction of a separate diagnostic index for casualties admitted to the hospital. This takes the place of the old system which was inadequate.

Table 85

Year	Total New Cases	Total Out-patients Attendances	Daily Average	Extractions	Oral Surgery Operations	Fillings	Dressings	Dentures	X-rays	Revenue
										$ c.
1951	7,149	29,168	106.06	22,973	..	3,490	12,556	1,457	3,571	29,125 65
1952	10,054	37,988	138.11	27,933	..	5,913	10,223	1,223	4,498	31,126 67
1953	14,444	50,449	183.42	51,972	..	6,006	31,604	1,726	6,298	44,535 59
1954	21,525	63,469	231.20	71,715	..	6,859	44,641	2,092	6,596	53,842 84
1955	27,895	82,107	278.74	83,392	847	6,039	52,201	1,873	6,761	34,738 85
1956	32,547	99,004	334.47	82,175	898	6,741	63,338	2,348	9,137	36,341 94
1957	36,508	107,700	362.05	67,785	646	9,048	64,018	2,304	10,683	32,068 65
1958	25,770	87,293	291.03	53,701	755	5,277	23,315	2,025	15,498	21,954 50
1959	33,958	101,754	340.1	61,826	887	7,660	20,314	1,638	16,610	22,368 10
1960	42,948	112,211	375.87	83,259	978	7,165	18,855	1,809	17,696	25,077 25
1961	39,242	110,687	370.66	56,062	1,131	10,875	16,787	2,247	13,103	29,849 75
1962	40,082	115,838	390.03	59,144	1,438	7,251	24,982	2,941	14,205	35,034 10

Chapter Fifteen

DISTRICT HOSPITAL

THOMSON ROAD HOSPITAL

Five wards are staffed and form a medical unit for the treatment of adult patients of both sexes.

The foundations of the new Surgical X-ray Casualty Block were laid in September. The buildings are expected to be completed at the end of next year.

Patients.—A fully functioning Medical Unit consisting of 180 beds cared for 2,008 patients during the year. Patients admitted are from the Admission Room of the General Hospital and from the Government out-patient dispensaries in the district.

Out-patient attendances totalled 8,874. Of these 2,357 were new patients.

There were 185 deaths.

SCHOOL OF NURSING FOR ASSISTANT NURSES

A total of 184 pupils commenced their training under three qualified Sister Tutors assisted by two teaching Sisters.

The School is now fairly well equipped following the purchase of cine and slide projectors, tape-recorders, episcope and teaching charts.

The School conducts its own hospital examinations. Three final State Examinations were held and 81 qualified.

CLINICAL LABORATORY

The staff consists of two trained technicians and one laboratory technician-in-training. A total of 32,355 specimens were examined; about half being blood examinations, (16,073); the others were mainly biochemical tests, 3,382 and urine examinations, 9,538.

Four laboratory technicians are now in training in General Hospital. They will strengthen the present staff on completion of their training.

DISPENSARY

The staff consisted of one pharmacist and two dispensing assistants. An additional dispensing assistant was recruited during the latter half of 1962.

Table 86

ADMISSIONS AND DISCHARGES

——	Admitted during the year 1962	Discharged	Transferred	Absconded	Died	Total	Percentage of deaths to total treated	No. of beds	Average daily number of patients
Male	1,215	1,038	29	2	121	1,190	9.4	108	94
Female	793	684	23	..	64	771	7.7	72	55
Total ..	2,008	1,722	52	2	185	1,961	8.72	180	149

Prescriptions during the first six months of the year totalled 4,646 which is an increase of 84 per cent during the corresponding period in 1961.

In the second half of 1962, 6,911 prescriptions were dealt with — an increase of 3,593 (106 per cent) over the corresponding period of 1961.

ALMONER

A total of 552 patients were seen by the almoner showing an increase of over 30 per cent over 1961.

Ward rounds twice weekly were made with the medical staff for a better understanding of patients.

In 1962 the Almoner's Welfare Fund was increased to $1,200.

During the year the almoner continued to supervise students doing the Social Studies course at the University of Singapore. She also attended the second Pan-Pacific Conference at Manila for the rehabilitation of the disabled.

OCCUPATIONAL THERAPY

The nature of the occupational therapy changed somewhat during the year. There was increased activity in the work carried out in the wards, mainly in the form of diversional therapy for the acute and sub-acute cases.

A total of 4,042 saleable articles were produced and of these 4,023 were sold and a sum of $2,680.70 were realised.

Chapter Sixteen

THE OUT-PATIENT SERVICES

THE following are grouped in the Out-patient Services:

(*a*) Casualty Department at the General Hospital;

(*b*) the 20 out-patient dispensaries and 8 public dispensaries formerly of the City Council;

(*c*) the travelling dispensaries of which there are 4;

(*d*) Government officials' clinics and former City Council staff dispensaries; a dispensary for the families of Police and a small hospital for Police;

(*e*) Prison hospitals;

(*f*) Opium Treatment Centre at St. John's Island.

It should be noted that the out-patient clinics run by hospitals and units of hospitals are quite separate and are generally clinics for referrals and follow-up of special cases.

The staff consists of a superscale administrative medical officer in-charge of the out-patient services and 59 timescale medical officers. There are 70 nursing personnel and 10 hospital assistants engaged in it as well as 3 Pharmacists, and 12 dispensing assistants.

Development.—A small out-patient dispensary was opened in Somapah on 24th July, 1962. This has room for a single consultation room; as the community served is a small one (estimated at 27,000). Buildings on three others, at Queenstown, Still Road and Prinsep Street were well in hand and will be ready early in 1963.

CASUALTY DEPARTMENT

Casualty Room.—124,014 casualties were seen in 1962 against 110,923 in 1961, an increase of 13,091.

Table 87

	1958	1959	1960	1961	1962
Road Accidents ...	5,760	6,964	5,580	5,672	6,725
Examination for Alcoholic Intoxication ...	1,319	1,563	1,410	1,427	1,700
Rape and other sexual offences	67	45	30	26	56

Treatment and Dressing Rooms.—This Section undertakes the dressings of patients from the Out-patient and Casualty Units, Surgical and Medical Out-patient Units of the Hospital and injections of streptomycin of tuberculous out-patient cases from the Tan Tock Seng Hospital.

During the year under review 386,790 treatments were done, an increase of 33,573 from the previous year of 353,217.

Casualty Minor Theatre.—Minor surgery in the nature of stitchings of minor wounds and incisions of abscesses were carried out at the Casualty Minor Theatre. During the year, 19,933 stitchings of wounds and 1,045 incisions of abscesses were done.

Laboratory.—41,293 routine specimens were examined during the year:

Urine	26,692
Blood	11,963
Fæces	1,962
Swabs, etc.	676
Total ...	41,293

OUT-PATIENT DISPENSARIES

General Hospital Out-patient Department.—473,194 cases were recorded in 1962 against 449,360 in 1961. 216 persons were examined for assessment of age from the Labour Department, Commissioner for Registration, Immigration and Police Departments. 286 male and 276 female positive tuberculosis cases were detected and referred to Tan Tock Seng Hospital.

Table 88

OUT-PATIENT DEPARTMENT

NEW-CASES			REPEAT CASES			Total
Male	Female	Child	Male	Female	Child	
86,427	68,751	92,302	75,316	62,334	88,064	473,194

Kallang Outdoor Dispensary.—This clinic is situated at Mountbatten Road. It is a full-time out-patient clinic from March 1962. The School Clinic functions on Friday afternoons and Psychiatric Clinic on Tuesday afternoons.

During the year 260,483 patients were seen.

The extension to this clinic was completed in March 1962, and started functioning in the same month.

Paya Lebar Outdoor Dispensary.—This out-patient clinic situated at the junction of Upper Serangoon Road/Yio Chu Kang Road, is housed in a two-storey building with the old Post Office as extension. This clinic is used as a School Clinic on Monday and Friday afternoons, and as a Psychiatric Clinic on Tuesday and Thursday afternoons.

During the year 156,951 patients were seen.

Pegu Road Outdoor Dispensary.—This clinic is situated at Pegu Road off Balestier Road.

During the year 167,670 patients were seen.

Pasir Panjang Outdoor Dispensary.—This Clinic is situated at 5½ milestone, Pasir Panjang Road.

During the year 53,669 patients were seen.

Bukit Panjang Outdoor Dispensary.—This Clinic is situated at Jalan Teck Whye in Bukit Panjang Village area.

During the year 148,639 patients were seen.

Bukit Timah Outdoor Dispensary.—This Clinic is housed in the Maternity and Child Health Clinic at Bukit Timah. The primary function of the clinic is to continue treatment of patients resident in this area, who have been discharged from the hospitals. A total of 50,424 attendances were recorded.

Kandang Kerbau General Out-patient Unit.—This clinic is for women and children only.

During the year 26,523 women and 44,445 children attended the Clinic.

Pulau Brani Clinic.—This clinic is situated at the island of Pulau Brani.

During the year 17,170 patients were seen.

Pulau Tekong Clinic.—This clinic is situated at the island of Pulau Tekong.

During the year 10,047 cases were recorded.

Rural East Dispensary Services.—The total attendances at the General Out-patient Clinics is shown below:

Changi Point Clinic	6,685
Kampong Batak Clinic	9,254
Gulega Road Clinic	4,717

These general out-patient clinics are housed in the Maternity and Child Health clinics and function on sessional basis.

Thomson Road Outdoor Dispensary.—This clinic is situated at 5½ milestone, Thomson Road.

During the year 78,254 patients were seen.

Holland Road Clinic.—This clinic functions in the Holland Road Maternity and Child Health Clinic once a week on Wednesday mornings, The medical officer in-charge of Pasir Panjang Outdoor Dispensary and his staff visit this clinic on Wednesdays.

During the year 5,834 patients were seen.

Lim Ah Pin Outdoor Dispensary.—This clinic is housed in one wing of the Lim Ah Pin Community Centre, at Lim Ah Pin Road. The number of out-patient attendances for the year was 71,490.

Jalan Kayu Outdoor Dispensary.—This Clinic is situated at the junction of Jalan Kayu/Yio Chu Kang Road, 8½ milestone. The out-patient attendances for the year were 42,013.

Tiong Bahru Outdoor Dispensary.—This Clinic is situated at Jalan Mambina (off Tiong Bahru Road). It is housed in the ground floor of Housing Board flats. The out-patient attendances for the year were 56,101.

Somapah Road Outdoor Dispensary.—The new clinic is situated at Somapah Road, off Changi Road, 10 m.s. The clinic was completed in August and opened to public in September. The total out-patient attendances recorded up to 31st December, 1962 were 22,456.

PUBLIC DISPENSARIES

The public dispensaries are situated at Stirling Road, Prince Philip Avenue, Kee Seng Street, New Bridge Road, Aljunied Road, Upper Serangoon Road, Dunearn Road and Desker Road.

A fee of 50 cents is charged for each out-patient attendance.

The number of out-patients attendances recorded at each Dispensary for the year are given below:

Table 89

	Out-patient attendances
Stirling Road Public Dispensary	36,958
Prince Philip Avenue Public Dispensary	41,875
Kee Seng Street Public Dispensary	21,589
New Bridge Road Public Dispensary	41,157
Aljunied Road Public Dispensary	51,761
Upper Serangoon Public Dispensary	37,968
Dunearn Road Public Dispensary	83,943
Desker Road Public Dispensary	44,969
Grand Total ...	360,620

STAFF CLINICS

Government Senior Officials' Clinic.—This clinic is situated at General Hospital. The staff consists of 1 medical officer, 1 staff nurse, 1 office boy and 2 attendants. This clinic provides medical care for Government senior officials and their families. During the year, 5,270 new cases and 9,279 repeat cases were treated at this clinic. Vaccinations and inoculations totalled 1,936. 1,528 injections and 883 dressings were carried out. Medical Board numbered 40 and recruits for examination 924.

Government Junior Officials' Clinic.—This clinic is situated at General Hospital. The staff consists of 2 medical officers, 1 staff nurse, 1 junior nurse, 1 clerk and 5 hospital servants. The number of cases seen in the clinic are given below:

Table 90

New Cases	7,846
Repeat Cases	20,172
Injections	10,006
Dressings	2,533

City Council Staff Dispensaries.—The three staff dispensaries are: (i) City Hall Staff Dispensary, (ii) Alexandra Staff Dispensary and (iii) Lorong Lalat Staff Dispensary.

Free medical attention is provided by the three Staff Dispensaries to all the staff and open vote employees of the City Council, Housing and Development Board and some Government employees attached to certain Ministries in the City Hall Building. Dependants of these employees are not eligible for treatment at these dispensaries. Employees are free to seek medical treatment from private medical practitioners in which case their certificates are accepted by the Council and Housing Board subject to endorsement by the Medical Officers i/c of Staff.

There are 4,082 monthly paid staff, 8,277 open vote employees of the Public Utility Board and integrated departments of the City Council, plus 622 staff, 1,000 open vote employees of the Housing and Development Board, with 351 monthly paid staff from Government Ministries making a grand total 14,332 employees seeking medical treatment at these dispensaries.

During the year a total of 131,525 cases were attended to at the three dispensaries. Of these, 76,293 were new cases. An average of 11.5 days sick leave was granted by the staff dispensaries, hospitals and private practitioners to each person employed during the year. In addition to the above, 20,591 cases were treated by private medical practitioners, which is about 15 per cent of the total cases treated at the staff dispensaries.

The Senior Medical Officer i/c Staff is also performing the duties of visiting medical officer to the three dispensaries at Johore maintained by the Water Department. Two visits are made to Johore every month in this capacity.

Staff.—The approved strength of medical officers for the three Staff Dispensaries is eight. At present there are only four medical officers leaving four vacant posts.

Police Hospital.—The Police Training School Clinic and Hospital is for the members of the Police Force.

During the year, 23,175 out-patients attended the Clinic and 558 recruits were examined. There were 302 patients admitted to the Police Training School Hospital in 1962.

Police Families' Clinic.—The staff nurse in-charge of the clinic visits the various Police stations and gives advice to patients with minor illnesses and sends more serious cases to the nearest outdoor clinics or to General Hospital. During the year 29,585 out-patient attendances were recorded.

PRISON HOSPITALS

Changi Convict Prison.—The Changi Prison Clinic and Hospital is staffed by a medical officer, three hospital assistants and three Prison orderlies.

A regular inspection of the Prison health and sanitation was maintained throughout the year.

The daily average number of prisoners in the Prison was 770. The total number of out-patient attendances during the year was 27,169. A total of 254 in-patients were admitted into the Prison Hospital. The number of minor operations performed during the year was 28. The dental officer visited the Prison once a week and examined 1,514 cases in the year as against 1,249 in 1961.

Local Prison, Pearl's Hill.—The Local Prison Clinic and Hospital is staffed by a medical officer, eight hospital assistants and Prison orderlies.

Total number of prisoners admitted to Prison during the year was 4,623, the daily average being 659.

The Prison Hospital has 100 beds. There were 1,037 admissions to the hospital. Total out-patients treated at the Clinic were 25,016. Vaccination against small-pox were carried out on 4,623 cases. In the Prison Hospital there were 309 admissions for opium addictions, out of a total of 1,037 admissions, making 36.4 per cent.

The dental surgeon visited the Prison once a week; 1,938 dental cases were treated.

Opium Treatment Centre.—During the year the Advisory Committee investigated 210 male addicts (including 54 volunteers) and 5 female addicts (nil volunteers). A total of 179 males (including 54 volunteers) were admitted to St. John's Island for rehabilitation. By the end of the year, 187 males had completed their rehabilitation and were discharged, including 53 volunteers.

Opium Treatment Follow-up Clinic.—This clinic was conducted at the Out-patient Department, General Hospital on every Friday afternoon, for the follow-up of patients who have been released from St. John's Island. The number of patients' visits to the clinic was 749 during the year.

Table 91

1962

DISTRIBUTION OF STAFF OF OUT-PATIENT DISPENSARIES

Clinic	Sessions	Medical Officers	Pharmacists	Sisters	Nurses	Nurses (Men)	Hospital Assistants	Clerk	Laboratory Assistant	Disp. Assistant	Matron
General Hospital Out-patient and Casualty Unit	Out-patient: 8 a.m. to 4 p.m. Casualty and Emergency Out-patients: 24 hours service	20	. .	3	15	17	. .	12	1	. .	1
Kallang Outdoor Dispensary . .	Morning and Afternoon Sessions	2 full-time 3 morning session	1	1	4	. .	. .	3	1	3	. .
Kampong Bugis O.D.D. . .	—	1	. .	. .	1	. .	. .	1	. .	1	. .
Paya Lebar Outdoor Dispensary	Morning and Afternoon Sessions	2 full-time	. .	1	1	. .	1	1	. .	. .	. .
Pegu Road Outdoor Dispensary	Morning and Afternoon Sessions	3 full-time	1	. .	2	. .	. .	1	. .	2	. .
Pasir Panjang Outdoor Dispensary	Morning and Afternoon Sessions (except Wednesday mornings)	1	. .	. .	1	. .	1	1	. .	. .	. .
Bukit Panjang Outdoor Dispensary	Morning and Afternoon Sessions	2	. .	. .	1	. .	. .	1	. .	2	. .
Bukit Timah Outdoor Dispensary	Morning and Afternoon Sessions	Part-time work by M.O. Bukit Panjang	. .	. .	1	. .	1	. .	. .	. .	. .
Kandang Kerbau General Out-patient Unit	Morning and Afternoon Sessions	2	. .	1	1	. .	. .	. .	. .	. .	. .
Pulau Brani Clinic	Morning and Afternoon Sessions	. .	. .	. .	. .	. .	1	. .	. .	. .	. .
Pulau Tekong Clinic . .	Morning and Afternoon Sessions	Part-time work by M.O. Changi Prison	. .	. .	. .	. .	1	. .	. .	. .	. .

Table 91

DISTRIBUTION OF STAFF OF OUT-PATIENT DISPENSARIES—*continued*

Clinic	Sessions	Medical Officers	Pharmacists	Sisters	Nurses	Nurses (Men)	Hospital Assistants	Clerk	Laboratory Assistant	Disp. Assistant	Matron
Rural East Dispensaries Service:											
Changi Point	2 Afternoon Sessions weekly	Part-time work by M.O. Changi Prison	..	..	..	..	Part-time work by H.A. i/c Travelling Dispensaries	..	..	..	..
Kampong Batak	2 Afternoon Sessions weekly	Do.	..	..	..	..	Do.	..	..	..	..
Gulega Road	1 Afternoon Session weekly	Do.	..	..	..	..	Do.	..	..	..	..
Somapah Road O.D.D. ..	—	1	..	1	..	..	..	1	..	1	..
Tiong Bahru Outdoor Dispensary	—	2 full-time	1	1	1	..	..	1	..	1	..
Thomson Road Outdoor Dispensary	Morning and Afternoon Sessions	1	..	1	1	..	1	..	..	..	..
Holland Road Outdoor Dispensary	Once Weekly Morning Sessions	Part-time work by M.O., Pasir Panjang	..	..	Part-time	..	Part-time	..	..	..	..
Lim Ah Pin Outdoor Dispensary	Morning and Afternoon Sessions	1	..	..	1	..	..	1	..	1	..
Jalan Kayu Outdoor Dispensary	Morning and Afternoon Sessions	1	..	..	1	..	..	1	..	1	..
Government Officials' Clinics ..	Morning and Afternoon Sessions	3	..	..	2	..	..	1	..	..	..
Police Families' Clinic ..	—	..	..	..	1	..	..	..	..	..	..
Police Hospital	—	1	..	..	..	..	1	..	..	..	..
Changi Prison Hospital ..	—	1	..	..	..	1	2	..	..	..	..
Local Prison Hospital ..	—	1 full-time 1 part-time	..	..	..	6	1	..	..	..	..
Opium Treatment Centre ..	—	Part-time M.O.	..	..	..	2	..	..	..	..	..

Chapter Seventeen

TUBERCULOSIS SERVICE

TUBERCULOSIS CONTROL UNIT

STAFF

Dr. Wong Hin Sun, Senior Chest Physician, Tan Tock Seng Hospital was Acting Assistant Director of Medical Services (Tuberculosis) from the beginning of the year to 6th October, 1962. Dr. Wong left Singapore on 7th October, 1962 on a W.H.O. Fellowship, training in tuberculosis. He will be away until 31st August, 1963. Dr. Yeoh Seang Aun was Acting Assistant Director of Medical Services (Tuberculosis) from 7th October, 1962 to the end of the year. He will continue to act until Dr. Wong's return.

At the end of the year the composition of the staff was as follows:—

Acting Assistant Director of Medical Services (Tuberculosis).
Medical Officer seconded from Tan Tock Seng Hospital.
Medical Officer, part-time.
Registrar, Tuberculosis Registry.
3 Laboratory Technicians.
4 Laboratory Technicians-in-training
1 Sister.
13 Staff Nurses.
2 General Clerical Officers.
Clerical Officer (Interpreter).
10 Clerical Assistants.
23 Female Assistant Nurses, seconded from Tan Tock Seng Hospital.
2 Junior Photographic Assistants.
7 Laboratory Attendants.
4 Drivers, General Purpose.
4 Medical and Health Servants.
2 Office Boys.

ADMINISTRATION

The Tuberculosis Control Unit serving as the centre of all activities against tuberculosis continued the following functions:

(*a*) the maintenance of a Central Tuberculosis Registry which is the centre for accurate, complete and current information on all notified tuberculosis cases;

(*b*) the maintenance of a Central Culture Laboratory for the examination and culture of sputum and sensitivity tests of mycobacterium tuberculosis to anti-tuberculosis drugs;

(*c*) the maintenance of a Recall Clinic for the follow-up of cases recalled from X-ray Surveys, the periodical check-up of cases initially diagnosed as "scars" and the assessment of cases not yet proven as active;

(*d*) the maintenance of a Contact Clinic for the follow-up and examination, including home visits and clinic attendances, of all contacts of known cases;

(*e*) to direct and supervise the State B.C.G. campaign;

(*f*) to provide the School Tuberculosis Service;

(*g*) to conduct mass and group X-ray surveys;

(*h*) to teach and train personnel in all aspects of tuberculosis control, such as home visitors, laboratory technicians and staff nurses on the Public Health Nursing Course;

(*i*) to formulate plans for the effective control of tuberculosis.

LEGISLATION

The proposed legislation for compulsory B.C.G. vaccination was dropped as the response was satisfactory and it was decided to carry on as it is, i.e. on a voluntary basis and parental consent being still necessary before B.C.G. is given.

CENTRAL TUBERCULOSIS REGISTRY

The number of tuberculosis notifications registered was 5,731*. The following statement shows the number of notifications received for the year by month with comparable figures for 1958, 1959, 1960, 1961 and 1962:

Table 92

Statement showing number of notifications registered in 1958, 1959, 1960, 1961 and 1962 by month

Month	Number Registered				
	1958	1959	1960	1961	1962
January ...	... —	365	287	295	528
February ...	... —	284	298	267	476
March ...	... —	320	507	600	438
April ...	... —	277	370	568	382
May ...	... —	387	454	614	495
June ...	... —	258	464	497	551
July ...	... —	743	604	510	500
August ...	... 176	834	554	425	400
September ...	... 256	756	449	511	605
October ...	... 626	541	323	660	503
November ...	... 639	421	353	628	372
December ...	... 382	480	394	724	523
Total	... 2,079*	5,666	5,057	6,299	5,773

* Provisional only.

	1958	1959	1960	1961	1962
Monthly average	416	472	421	525	481

* The Quarantine and Prevention of Disease (Amendment) Ordinance, 1958, No. 19 of 1958 which requires medical practitioners to submit notifications of tuberculosis cases to the Assistant Director of Medical Services (Tuberculosis), came into operation on 1st August, 1958.

The position of the Central Tuberculosis Register as at 31st December, 1962 was as follows:

Table 93

Central Tuberculosis Register

Cases as at 1-1-62		16,922
Add cases registered for the year 1962		
(*a*) Pulmonary	5,695	
(*b*) Extra-Pulmonary ...	78	
		5,773
		22,695
Less Cases removed from register in 1962		759
Number of cases on the register as at 31st December, 1962 ...		21,936

Further statistics on tuberculosis appear in the appendices.

CENTRAL CULTURE LABORATORY

The Central Culture Laboratory continued its function of performing bacteriological examinations in connection with tuberculosis and all cultures and sensitivity tests for mycobacterium tuberculosis for all the hospitals in Singapore. At the beginning of the year the laboratory also did some experimental work on the lypholised serum liquid media in conjuction with the World Health Organisation.

The work done during the year was as follows:

Table 94

SPECIMENS DONE FOR ALL THE HOSPITALS (27,351 SPECIMENS)

——	Total	Negatives	Positives	Atypical A.F.B.	Conts	% POS	% Conts
Specimens Reported ..	23,747	19,742	3,656	31	318	15.4	1.3
Laryngeal Swab	20,325	16,778	3,384	27	136	16.6	0.7
Sputum and Muccus ..	1,677	1,414	172	3	88	10.3	5.2
Urine	790	691	31	..	68	3.9	8.6
Pleural Fluids and Aspiration Fluids	354	318	24	..	12	7.0	3.5
Pus	190	156	30	..	4	16.0	2.0
Tissues (Lungs, Bones and Endometriums)	52	48	3	1	..	6.0	..
C.S. Fluids	289	275	7	..	7	2.4	2.4
Gastric Lavage	40	38	2	..	..	5.0	..
Throat Swabs	13	12	1	..	..	7.7	..
Stool	17	14	..	..	3	..	..
Cultures not Read	3,604	..	..	..	..	..	..

Table 95

SPECIMENS DONE FOR T.B. CONTROL UNIT (2,705 SPECIMENS)

——	Total	Negatives	Positives	Atypical A.F.B.	Conts	% POS	% Conts
Specimens Reported ..	2,442	2,311	123	4	4	5.0	0.16
Laryngeal Swabs	1,430	1,351	76	2	2	5.3	0.07
Sputum	1,012	960	47	2	3	4.7	0.3
Cults not Read	263	..	..	..	..	..	..

29 direct smears and 28 concentrated smears were done from hospital specimens. 6 smears, 3 from each group were *positive*.

1,340 direct smears were done from the mass X-ray cases and 36 smears or 2.7 per cent were positives. Only 3 concentrated smears were done.

Table 96

SENSITIVITY TESTS DONE ON ALL POSITIVE CULTURES

(4,825 cases including those from S.A.T.A.)

———	Strains	Sensitive 1 unit	Sensitive 5 units	Sensitive 25 units	Sensitive 125 units	Resistant 125 units
I.N.H. ..	4,157	1,769	1,382	313	655	38
Streptomycin ..	4,157	..	2,422	492	308	935
P.A.S. ..	4,157	..	2,653	426	466	612
Cycloserine ..	225	..	15	35	165	10
Pyrazinamide ..	225	..	9	31	41	144
Viomycin ..	225	..	12	72	110	31
Trescatyl ..	225	..	20	119	83	3
Isoxyl ..	124	..	..	2	122	..
Tests not read ..	403	..	..	..	..	..
Tests not successful	40	..	.	..	..	..

Results of Direct and Concentrated Smears.—Most of the direct smears were prepared from specimens of patients coming from the Survey X-Ray Unit. Every patient on arrival at the Laboratory was asked to cough out some sputa. Direct smears and cultures were only done from satisfactory specimens. For those patients, who did not produce satisfactory sputa on the spot, laryngeal swabs were taken for culture. Patients of the latter category were supplied with containers and instructed to collect satisfactory specimens at a later date. So far, about 50 per cent of the patients complied with the request.

Out of the 1,340 direct smears done 36 or 2.7 per cent were *positive*, as compared with 517 smears done and 17 positives last year. Concentrated smears were only done at special requests and did not include in the routine.

Results of Cultures done.—30,056 cultures were done in 1962. 26,189 specimens had been reported and 3,867 specimens still in incubation. Out of the 23,747 reported Hospital specimens, 3,656 or 15.4 per cent were positives, compared with a rate of 5 per cent positives from 2,442 reported Mass X-ray cases.

Laryngeal swab cultures produced the highest percentage of positives, 16.6 per cent for hospital cases and 5.3 per cent for mass X-ray cases. Sputum cultures yielded 10.3 per cent positive cultures from 1,677 specimens. The lowest rate of positives came from the C.S.F. cultures. Only 7 cases or 2.4 per cent were positives out of 289 cases, and methods had been modified to get improved results, by spinning down the deposits for a longer period before inoculation. All C.S.F. which were clear, were not treated with any acids or alkalines, but centrifuged and inoculated straight away.

MASS AND GROUP X-RAY SURVEYS

During the year 52,749 persons were radiologically examined.

Table 97

STATEMENT SHOWING AREA FOR GROUP SURVEYED, NUMBER X-RAYED AND NUMBER OF ABNORMALITIES DISCOVERED ON RADIOLOGICAL EVIDENCE

———	Number X-Rayed	Active lung tuberculosis	Suspicious lung tuberculosis requiring investigation	Scars as a result of healed tuberculosis	Bronchiectasis and Cysts	Other non-tuberculous lung diseases	Heart abnormalities	Total of abnormalities	Technical Fault and Artefact
Mass X-Ray Survey									
Geylang	22,109	108	1,374	295	39	258	143	2,217	83
Group X-Ray Survey									
Fred Waterhouse ..	367	..	24	9	..	1	4	38	..
Engineer Stores Depot	365	5	43	2	..	7	1	58	..
Base Ordnance Depot	2,3318	6	63	8	1	16	6	100	..
Teachers and School Staff	13,653	19	489	185	4	136	82	915	14
Social Welfare ..	304	..	22	2	..	4	1	29	..
Immigration Dept. ..	148	..	2	1	..	2	1	6	..
Secondary School Leavers ..	10,723	18	171	76	5	69	38	377	29
School Hawkers ..	2,193	2	106	30	4	20	31	193	6
Tan Tock Seng Hospital Staff ..	569	..	65	9	..	3	3	80	..
Total ..	30,640	50	985	322	14	258	167	1,796	49
Grand Total ..	52,749	158	2,359	617	53	516	310	4,013	132

Recall Clinic.—3,007 new patients were seen at the Recall Clinic. A total of 9,301 attendances was recorded.

TUBERCULIN TESTING AND B.C.G. VACCINATION

Newborn Infants.—The B.C.G. team at Kandang Kerbau Hospital continued its work of giving B.C.G. vaccination to newborn infants delivered there. Of 33,347 infants discharged from the hospital in 1962, B.C.G. vaccinations were given to 33,163 showing a response of 99 per cent as compared with 99 per cent in 1961 and 1960, 96 per cent in 1959, 94 per cent in 1958 and 93 per cent in 1957.

B.C.G. vaccination of infants under the age of one month started in two Maternal and Child Health Clinics (Rural) in 1957 and subsequently extended to 20 clinics was continued. From 1st November, 1962 infants up to the age of two months were given B.C.G. vaccination. A total of 5,907 B.C.G. vaccination was given.

B.C.G. vaccination at Maternal and Child Health clinics (Urban) started in July 1958 was also continued. 6,584 infants were given B.C.G. vaccination.

Institutions.—During school vacation, the staff carried out H.M.P. testing and B.C.G. vaccination at the following institutions:

Girls' Home Craft Centre.
Gimson School for Boys.
Perak House.
Bukit Batok Boys' Hostel.
Prince Edward Road Boys' Hostel.
Mental Defective Home.
Muslim Women's Welfare Home.
Mount Emily Girls' Home.

Homes

Salvation Army Nursing Home.
Salvation Army Children's Home.
Salvation Army Boys' Industrial Home.
Salvation Army Girls' Home.
Red Cross Crippled Children Home.
Convent of Holy Infant Jesus.
School for the Blind.

Creches

Kreta Ayer Creche.
New Market Road Creche.
Ramah Street Creche.
Moh Guan Terrace Creche.
Victoria Street Creche.
Horne Road Creche.

In all 1,932 persons were tested and 134 received B.C.G. vaccination.

CONTACT EXAMINATION

Home Visits.—During the year nurses carried out visits to 20,619 patients and contacts and recorded a total of 29,662 visits. Home visits are made to ensure that notified cases of tuberculosis are receiving treatment and that all their contacts are examined.

During the mass X-ray survey of Geylang District nurses made a total of 48,493 home visits to residents to distribute attendance cards and to urge them to attend the X-ray centre.

Contact Examination.—All contacts of notified cases of tuberculosis who are below 15 years of age are tuberculin tested. Negative reactors to tuberculin are given B.C.G. vaccination. Positive reactors are X-rayed.

New contacts registered during the year numbered 8,804 and a total of 28,143 attendances was recorded at the Contact Clinic at Tan Tock Seng Hospital. All contacts of tuberculosis cases at schools were centralised and investigated at the School Tuberculosis Clinic at the Institute of Health.

SCHOOL TUBERCULOSIS SERVICE

Since the transfer of control from the Assistant Director of Medical Services (Health) in April 1958 this service has been re-organised and the work now consists of:

(*a*) tuberculin testing and B.C.G. vaccination of school children;
(*b*) case-finding;
(*c*) investigation and treatment of cases found in schools;
(*d*) contact investigation of Index cases found in schools;
(*e*) feeding of infected and undernourished school children.

Table 98

B.C.G. VACCINATION OF INFANTS AT KANDANG KERBAU HOSPITAL, 1962

Month	Number Discharged and Fit for B.C.G.	Number Given B.C.G.	Percentage	Total Discharges from Hospital	Race (Received B.C.G.)				
					Malays	Chinese	Indian	Others	Total
January	2,701	2,686	99	2,890	266	2,218	180	22	2,686
February ..	2,359	2,336	99	2,554	245	1,858	213	20	2,336
March	2,749	2,728	99	2,972	281	2,175	254	18	2,728
April	2,552	2,537	99	3,046	199	2,115	207	16	2,537
May	2,756	2,754	100	2,954	266	2,239	222	27	2,754
June	2,795	2,793	100	2,984	286	2,258	232	17	2,793
July	2,872	2,860	100	3,067	321	2,281	244	14	2,860
August	2,825	2,811	100	3,049	307	2,211	277	16	2,811
September ..	2,806	2,783	100	3,038	280	2,257	219	27	2,783
October	2,956	2,928	99	3,197	311	2,372	220	25	2,928
November ..	3,135	3,111	99	3,341	348	2,550	196	18	3,111
December ..	2,841	2,836	100	3,031	361	2,267	192	16	2,836
Total ..	33,347	33,163	99.4	36,123	3,470	26,801	2,656	236	33,163

Tuberculin testing and B.C.G. vaccination were done in 446 schools (35 Malay schools, 234 Chinese schools, 15 Indian schools and 162 English schools). All children in Primary I and Primary VI classes, with parental consent, received Heaf multiple puncture tuberculin tests. Negative reactors to these tests were given B.C.G. vaccination. Severe reactors (Heaf Positive iii and iv) were X-rayed.

During the year 73,538 children were tuberculin tested. Out of this number 25,247 were negative reactors and were given B.C.G. vaccination. 6,367 children were given chest X-ray examinations.

Table 99

Tuberculin Testing (H.M.P.) and B.C.G. Vaccination of School Children

Year		Number of Schools Done				
	Malay	Chinese	Indian	English	Private	Total
1957 ...	31	123	12	157	4	327
1958 ...	20	28	—	140	—	188
1959 ...	53	401	12	235	—	701
1960 ...	62	397	16	267	—	742
1961 ...	49	283	12	250	—	594
1962 ...	35	234	15	162	—	446

Table 100

Number of Tuberculin Tests and B.C.G. Vaccinations done in Schools

Year	Tuberculin Tests	B.C.G. Vaccinations
1957 ...	... 35,633	20,338
1958 ...	... 17,466	9,790
1959 ...	... 60,577	19,340
1960 ...	... 69,339	23,029
1961 ...	... 59,301	18,439
1962 ...	... 73,538	25,247

Case-Finding in Schools.—Active case-finding to detect tuberculosis in schools was continued. Cases with symptoms were as usual referred to the School Tuberculosis Clinic by School Health officers. X-ray examinations were done among the following:

(*a*) Secondary school leavers;
(*b*) Primary I and VI children reacting severely to tuberculin test;
(*c*) school teachers;
(*d*) Other employees in schools and school canteens.

Out of 6,367 school children X-rayed, 41 cases of active post-primary tuberculosis and one case of miliary tuberculosis were found. In addition there were 134 cases of active primary infection, 8 cases of pleural effusion, 959 healed primary and 178 cases were under investigation.

Out of 13,653 school teachers and school staff X-rayed, 19 active cases of tuberculosis were found, and 489 were classified as cases of suspicious lung tuberculosis requiring investigation.

Out of 2,193 school hawkers X-rayed there were 2 cases of active tuberculosis and 106 cases requiring investigation.

All hawkers who were taken off work and had to remain off work for some time were transferred to the Tan Tock Seng Hospital for Social Welfare aid and treatment. With the exception of these, and such patients as had to be hospitalised, all other patients, both school children and school staff, on active treatment were treated at the School tuberculosis clinic at Institute of Health.

The table below shows the routine clinic attendance at the School Tuberculosis Clinic in 1962:

Table 101

	School Children	School Teachers	School Servants and Hawkers	Total
New Cases	1,453	38	52	1,543
Re-visits	8,987	660	468	10,115
Total ...	10,440	698	520	11,658

Feeding Scheme.—The feeding scheme, started in 1949 was continued. In 1962 the sum of $22,000 was allowed under this scheme. New cases put on feeding during the year numbered 262. 12,960 lb. of skimmed milk donated by UNICEF were also issued. The feeding was a fortnightly distribution of the following to undernourished children suffering from tuberculosis:

(*a*) 1 lb. full cream milk.
  ½ lb. vitaminised skimmed milk.
  ¼ lb. ovaltine.
(*b*) ½ lb. fresh butter.
(*c*) 6 eggs.
(*d*) 6 oranges.
(*e*) 1 lb. shelled peanuts.

This diet was recommended by the Dietitian, University of Singapore. The following statement and table give an indication as to the number of persons catered for and the number of feeds distributed—

Statement

Cases on feeds brought forward from December, 1961 ...	252
New cases in 1962	262
Total cases on feeds in 1962	514
Total cases taken off feeds	266
Cases carried forward to 1963	248

Table 102

Number of Distribution in 1962

Age Group in years	1 — 5	6 — 10	11 — 15	Total
New Cases ...	37	155	70	262
Re-visits ...	715	3,791	1,692	6,198
Total ...	752	3,946	1,762	6,460

Statistics and Records.—The annual mortality rate for pulmonary tuberculosis and tuberculosis of all forms per 100,000 of the population for the years 1957 to 1962 were as follows:

	1957	1958	1959	1960	1961	1962
Tuberculosis of all forms	51.9	41.2	39.7	39.5	38.2	37.7
Pulmonary Tuberculosis	46.4	37.5	36.5	37.5	36.2	36.1

Acknowledgement.—Opportunity is taken of thanking the UNICEF for providing equipment, transport and supplies up to the value of $41,800 for a tuberculosis project in the State of Singapore.

TAN TOCK SENG HOSPITAL

Tan Tock Seng Hospital continued to function as the main centre for treatment of tuberculosis. One new ward was opened bringing the total bed strength to 1,250.

Staff.—The administrative office staff consisted of the Medical Superintendent, one Higher Executive officer, nine clerical officers, one clerical assistant and two typists.

The clinic staff comprised 1 senior Chest physician, 3 Chest physicians and their staff of 1 senior registrar, 14 medical officers, 3 stenographer-receptionists, 2 stenographers and 13 clerical officers (Interpreters).

During the year Dr. Wong Hin Sun was promoted as Senior Chest Physician, Grade *E,* and Dr. Chew Chin Hin was promoted to Senior Registrar.

One matron, Grade I and one matron, Grade II headed the Nursing Staff of 25 Sisters, 4 charge nurses, 15 staff nurses, 17 male nurses, 4 senior assistant nurses, 537 assistant nurses and 603 medical and health servants.

Other ancillary staff consisted of:

1 Chief Hospital Assistant
2 Hospital Assistants (Special Grade)
2 Hospital Assistants (Timescale)
2 Pharmacists
2 Senior Dispensing Assistants
7 Dispensing Assistants
6 Almoners
2 Physiotherapists
1 Occupational Therapist
1 Steward
5 Radiographers
7 Laboratory Technicians
1 Supervisor (Hostels)

Three Sisters of the Franciscan Mission of the Divine Motherhood, together with 4 staff nurses and 45 student nurses comprised the nursing staff of the Mandalay Road Section of the Tan Tock Seng Hospital. The three Sisters resigned from the service with effect from 16th December, 1962. Thus ended the association which began in 1950 of these nursing nuns in the nursing service and in the teaching of tuberculosis nursing at the Hospital.

Table 103 gives a return of tuberculosis cases admitted to Government hospitals in Singapore. Admission to hospital for in-patient treatment is made according to various priorities on medical and social grounds.

Table 103

TUBERCULOSIS CASES ADMITTED TO GOVERNMENT HOSPITALS

	1958	1959	1960	1961	1962
Tan Tock Seng Hospital:					
Pulmonary ...	3,064	2,588	2,752	2,562	3,089
Bones and Joints ...	171	169	115	129	26
Other forms ...	41	62	43	54	69
General Hospital:					
Pulmonary ...	785	660	703	647	600
Bones and Joints ...	338	332	157	293	197
Other forms ...	242	252	230	196	115
St. Andrew's Orthopædic Hospital:					
Pulmonary ...	—	—	19	21	5
Bones and Joints ...	245	121	155	238	138
Other forms ...	—	—	—	1	2
Total ...	4,886	4,184	4,134	4,141	4,241

TREATMENT

More and more patients were treated as out-patients as hospitalisation was no longer regarded as very essential except for certain cases, e.g. toxic cases, and also those who had to be admitted for postural dependency.

The standard drugs used were streptomycin, para-amino-salicylic acid and isonicotinic acid hydrazide.

Tests for drug sensitivity of mycobacteria tuberculosis were continued. For those cases that were resistant to the standard drugs, cycloserine, viomycin, pyrazinamede, trescatyl (M & B) and kanamycin were used. Although these secondary drugs were found useful in the resistant cases, the use of these drugs had to be abandoned early this year due to the high cost. Where drug treatment failed, surgery was resorted to in suitable cases.

Minor surgical operations were done in this hospital:

Bronchoscopies done	300
Minor operations	120

Major thoracic surgeries done by surgeons at the General Hospital were as follows:

Thoracoplasty	26
Resections:	
Segmental	10
Lobectomy	29
Pneumonectomy	4
Total ...	69

ROTARY TUBERCULOSIS CLINIC

The Rotary Tuberculosis Clinic continued to cater for out-patients and the tremendous volume of work done can be gauged from the following return:

Table 104

RETURN OF WORK, ROTARY TUBERCULOSIS CLINIC

	1958	1959	1960	1961	1962
New cases of Tuberculosis	2,790	2,685	2,863	3,613	3,231
Repeat visits of cases of Tuberculosis	364,272	377,866	342,760	399,211	475,470
Cases seen by Specialists:					
(*a*) New cases	3,434	3,946	2,703	3,613	2,597
(*b*) Old cases	44,474	49,768	47,935	49,173	50,579
X-ray examinations	82,682	90,697	78,094	85,576	92,419
Fluroscopic screenings	1,743	1,422	1,189	—	552
Laboratory examinations	110,447	94,551	94,034	109,125	130,407
A.P. Inductions	—	—	—	—	—
A.P. Refills	—	—	—	—	—
P.P. Inductions	24	84	48	21	11
P.P. Refills	8,586	7,046	6,046	3,646	2,382

Training.—27 student nurses passed the Tuberculosis Nursing Examination. The British Tuberculosis Association, London, recognised the Tuberculosis Certificate awarded by the Tan Tock Seng Hospital and for the first time the papers were set by the British Tuberculosis Association, London and the examiners were also selected by the B.T.A. The examiners were Dr. A. W. E. Moreira of Ipoh and Sister D. Herbert from the Lady Templer Hospital in Kuala Lumpur.

49 assistant nurses passed the Final Nursing Examination.

ALMONER S DEPARTMENT

A total of 22,788 cases were seen during the year. Of these 4,943 were new cases, 17,657 current cases and 188 Federation and alien cases.

The almoners have continued to arrange for fostering of such babies recommended by the chest physicians and, as before, have worked in close touch with the Almoner, Kandang Kerbau Maternity Hospital, and with the Lady Supervisor, Children and Young Persons Section of the Social Welfare Department. Where no vacancy was available under the Department's Boarding Out Scheme, such cases were financed by the Almoner's Fund until a vacancy arose.

The major part of the work has been the rehabilitation of T.B. patients. Every effort is made to try to help a patient who is fit for work back into his old job if that is suitable for him. Otherwise the patient is helped either with training or recommended for alternative employment or again assisted with some funds to start a small business. Where a patient's main need had been to regain self-confidence in his ability to do a job or where after a long period of illness he is psychologically unattuned to the prospect of resuming work, the Hospital Six Months' Rehabilitation Scheme to accustom patients back to normal work is recommended.

The department has continued to provide training and three students from the Department of Social Studies, University of Singapore, were placed in this department during the year.

Our investigatior was awarded a well-deserved three -year Departmental Scholarship Course leading to the Diploma in Social Studies with Mental Health as a special subject at the University of Singapore.

PHYSIOTHERAPY DIVISION

During the first nine months of this year the Physiotherapy Department continued as in previous years with one full-time physiotherapist treating all the chest, medical and orthopædic patients.

With the addition of another physiotherapist to the staff, the staffing situation improved considerably.

Table 105

SUMMARY OF WORK DONE

Year	Treatment	No. of Patients treated
1958	25,032	1,965
1959	28,054	2,407
1960	20,019	2,400
1961	21,786	2,000
1962	18,634	2,160

OCCUPATIONAL THERAPY DEPARTMENT

The new building was occupied on 10th April, 1962.

Tan Tock Seng Hospital is the only Government institution that provides facilities for the training of disabled persons.

The department continued to give efficient training to an average of 53 patients per month, including disabled persons from the Labour Department. The patients were given instruction in the art of making raffia bags, basketry, embroidery and needlework.

DIVERSIONAL THERAPY UNIT

The year has been highly successful with the production of toys approximately the same in number as in the previous years. The annual sale of handicrafts was a great success. The articles produced for sale comprised toys, knitted garments, sewing and embroidery and plastic toys.

The success and smooth running of the Unit has been entirely due to the hard work of voluntary female workers.

RED CROSS LIBRARY

The Red Cross Library was kept active by nine voluntary female helpers On two mornings a week these ladies pushed trolley-full of books and magazines to wards and thereby gave the patients a chance to change books.

DENTAL CLINIC

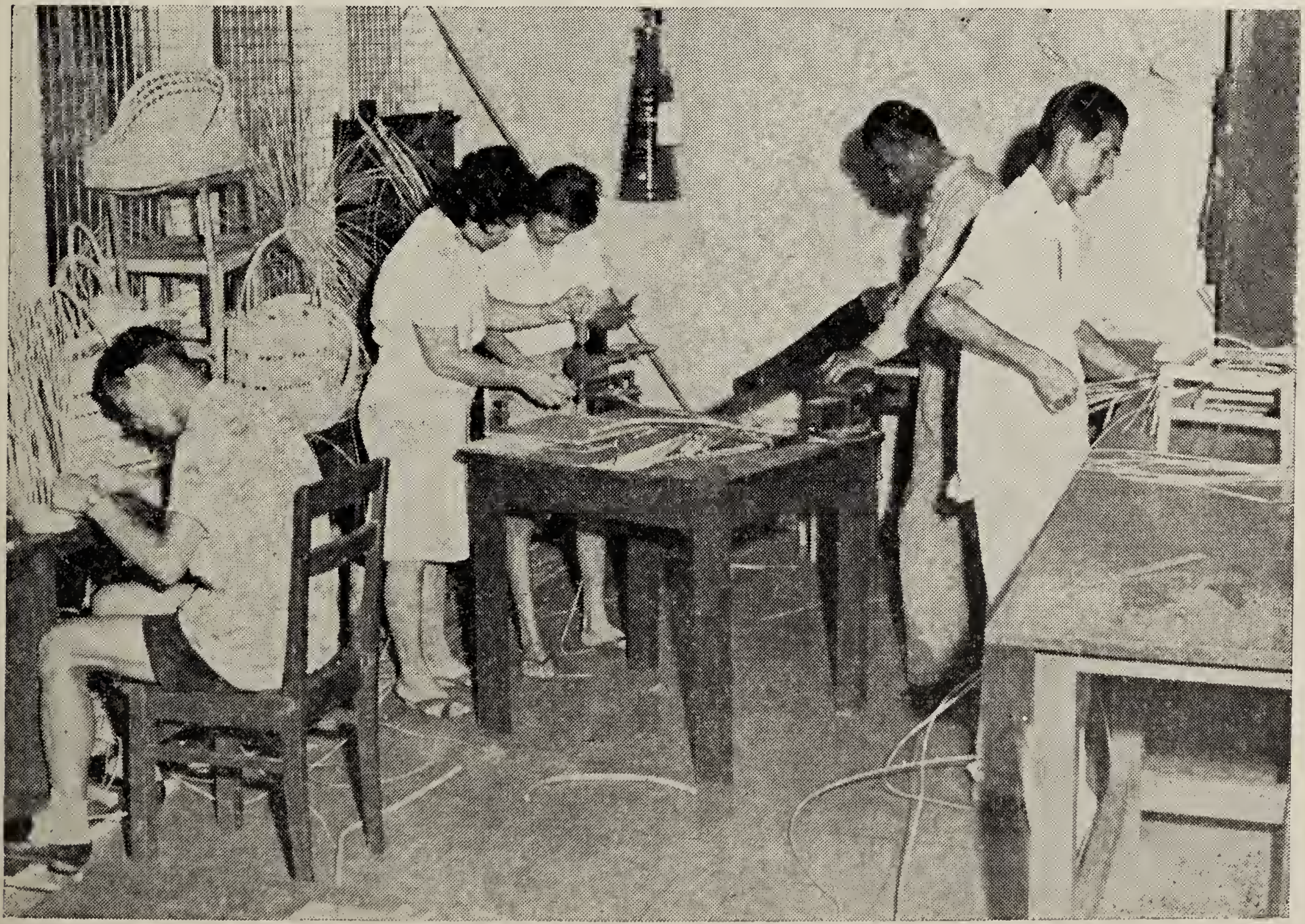
The Dental Officer visited the Clinic twice a week on Tuesdays and Fridays and attended to 2,495 patients.

Emergency treatment was accorded to in-patients and out-patients referred by the medical officers.

This treatment consisted mainly of Extractions, treatment of dental abscesses and a few emergency fillings for the relief of pain.

Routine clearance of oral sepsis was also carried out for pre-operative patients and ambulatory and bed-ridden patients in the wards.

"Creative Work"
Occupational Therapy — Tan Tock Seng Hospital



"Training in the Use of Tools"
Occupational Therapy — Tan Tock Seng Hospital

Table 106

ADMISSIONS AND DISCHARGES

—	Admitted during the Year 1962	Discharged	Transferred	Absconded	Died	Total	Percentage of deaths to total treated	Number of beds	Average daily number of patients
Male	3,019	2,664	57	14	303	3,038	..	916	..
Female	966	829	15	2	80	926	..	334	..
Total ..	3,985	3,493	72	16	383	3,964	7.52	1,250	1,109.66

APPENDIX I

STATISTICAL TABLE

Year	Mean Population 1,000s	NOTIFICATIONS			NUMBER ON REGISTER			PREVALENCE PER 100,000		Number Receiving T.B. Allowance	DEATHS			DEATH RATE PER 100,000	
		Pulm.	Ext. Pulm.	Total	Pulm.	Ext. Pulm.	Total	Pulm.	All Forms		Pulm.	Ext. Pulm.	Total	Pulm.	All Forms
1958	1,515	2,078	1	2,079*	2,009	1	2,010	133	133	2,349	568	56	624	37.5	41.2
1959	1,582	5,637	29	5,666	7,038	20	7,058	445	446	2,484	577	51	628	36.5	39.7
1960	1,634	4,985	72	5,057	11,278	59	11,337	690	693	1,985	612	34	646	37.5	39.5
1961	1,687	6,216	83	6,299	16,815	107	16,922	996	1,003	2,254	610	35	545	36.2	38.2
1962	1,733	5,695	78	5,773	21,756	180	21,936	1,255	1,266	2,149	626	28	654	36.1	37.7

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* From August to December 1958.

APPENDIX II

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR ENDING 31ST DECEMBER, 1962

SHOWING FORM AND EXTENT OF DISEASE, RACE AND SEX

Form and Extent of Disease	CHINESE			MALAYSIANS			INDIANS AND PAKISTANIS			OTHERS			PERSONS		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Min.	1,503	587	2,090	228	67	295	118	18	136	12	5	17	1,861	677	2,538
Mod.	1,312	395	1,707	153	48	201	112	15	127	11	2	13	1,588	460	2,048
Adv.	487	138	625	59	24	83	29	10	39	1	..	1	576	172	748
Pleur. Effus.	27	28	55	4	4	8	4	..	4	..	..	..	35	32	67
Extra Pul.	28	23	51	7	10	17	6	3	9	..	1	1	41	37	78
Pul. Extent not stated ..	208	41	249	13	6	19	17	3	20	3	3	6	241	53	294
Total ..	3,565	1,212	4,777	464	159	623	286	49	335	27	11	38	4,342	1,431	5,773

APPENDIX III

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR ENDING 31ST DECEMBER, 1962

SHOWING AGE, SEX, FORM AND EXTENT OF DISEASE

Age Group in Years	MALES								FEMALES								PERSONS							
	Min.	Mod.	Adv.	Pleur. Effus.	Extra Pul.	Pul. N/S	N/S	Total	Min.	Mod.	Adv.	Pleur. Effus.	Extra Pul.	Pul. N/S	N/S	Total	Min.	Mod.	Adv.	Pleur. Effus.	Extra Pul.	Pul. N/S	N/S	Total
0— 4 ..	1	..	..	..	1	1	..	3	1	..	1	..	3	1	..	6	2	..	1	..	4	2		9
5— 9 ..	9	2	1	..	2	2	..	16	9	1	..	2	1	..	..	13	18	3	1	2	3	2	..	29
10—14 ..	9	2	2	1	3	..	..	17	15	6	3	7	3	..	..	34	24	8	5	8	6	..	..	51
15—19 ..	97	61	8	4	8	..	..	178	48	28	9	2	5	..	..	92	145	89	17	6	13	..	..	270
20—24 ..	182	119	18	3	5	1	..	328	81	48	10	2	6	..	..	147	263	167	28	5	11	1	..	475
25—29 ..	194	107	20	3	2	4	..	330	73	42	9	5	5	2	..	136	267	149	29	8	7	6	..	466
30—34 ..	194	143	49	3	2	9	..	400	81	42	16	4	2	3	..	148	275	185	65	7	4	12	..	548
35—39 ..	231	149	30	4	..	7	..	421	78	54	14	2	4	3	..	155	309	203	44	6	4	10	..	576
40—44 ..	192	148	49	1	5	14	..	409	53	44	18	2	1	5	..	123	245	192	67	3	6	19	..	532
45—49 ..	208	185	87	6	7	23	..	516	72	29	13	1	2	5	..	122	280	214	100	7	9	28	..	638
50—54 ..	179	213	87	6	2	38	..	525	64	69	27	4	3	7	..	174	243	282	114	10	5	45	..	699
55—59 ..	149	175	88	1	3	53	..	469	43	41	20	..	1	5	..	110	192	216	108	1	4	58	..	579
60—64 ..	130	150	68	2	..	41	..	391	30	30	17	..	1	8	..	86	160	180	85	2	1	49	..	477
65—69 ..	57	69	49	..	1	22	..	198	15	14	7	..	..	5	..	41	72	83	56	..	1	27	..	239
70—74 ..	24	44	12	..	..	18	..	98	9	8	7	1	..	5	..	30	33	52	19	1	..	23	..	128
75 and Over	4	21	8	1	..	7	..	41	5	4	1	..	..	4	..	14	9	25	9	1	..	11	..	55
Not Stated	1	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	2
Total ..	1,861	1,588	576	35	41	241	..	4,342	677	460	172	32	37	53	..	1,431	2,538	2,048	748	67	78	294	..	5,773

APPENDIX IV

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR ENDING 31ST DECEMBER, 1962

SHOWING AGE, RACE AND SEX

Age Group in Years	CHINESE			MALAYSIANS			INDIANS AND PAKISTANIS			OTHERS			PERSONS		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0— 4	2	5	7	1	1	2	..	..	..	..	..	..	3	6	9
5— 9	12	12	24	2	1	3	2	..	2	..	..	..	16	13	29
10—14	11	28	39	5	4	9	1	2	3	..	..	..	17	34	51
15—19	157	77	234	14	9	23	7	6	13	..	..	..	178	92	270
20—24	283	122	405	30	13	43	15	9	24	..	3	3	328	147	475
25—29	286	104	390	25	23	48	17	8	25	2	1	3	330	136	466
30—34	317	122	439	42	19	61	37	6	43	4	1	5	400	148	548
35—39	309	131	440	76	20	96	34	4	38	2	..	2	421	155	576
40—44	297	102	399	62	17	79	45	3	48	5	1	6	409	123	532
45—49	412	108	520	62	11	73	39	2	41	3	1	4	516	122	638
50—54	432	153	585	46	19	65	43	2	45	4	..	4	525	174	699
55—59	413	95	508	33	11	44	22	3	25	1	1	2	469	110	579
60—64	329	76	405	43	6	49	16	3	19	3	1	4	391	86	477
65—69	180	37	217	14	3	17	3	..	3	1	1	2	198	41	239
70—74	88	28	116	8	1	9	2	1	3	..	..	..	98	30	128
75—Over	35	12	47	1	1	2	3	..	3	2	1	3	41	14	55
Not Stated	2	..	2	..	..	..	..	..	..	..	..	..	2	..	2
Total ..	3,565	1,212	4,777	464	159	623	286	49	335	27	11	38	4,342	1,431	5,773

APPENDIX V

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR ENDING 31ST DECEMBER, 1962

SHOWING OCCUPATION, RACE AND SEX

Occupation	Code	CHINESE			MALAYSIANS			INDIANS AND PAKISTANIS			OTHERS			GRAND TOTAL		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Professional, Technical and Related Occupation ..	0	62	13	75	7	..	7	5	1	6	5	1	6	79	15	94
Administrative, Executive and Managerial Occupations (Excluding Those in Agriculture and Retailed Trade)	1	10	..	10	1	..	1	2	..	2	..	..	..	13	..	13
Clerical Occupations ..	2	307	21	328	34	..	34	19	..	19	10	..	10	370	21	391
Sales and Related Occupations	3	610	17	627	13	..	13	25	..	25	1	..	1	649	17	666
Agricultural Occupations ..	4	68	..	68	11	..	11	..	..	..	..	..	..	79	..	79
Mines, Quarrying and Related Occupations	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Transport and Communication Occupations	6	287	3	290	94	..	94	13	..	13	1	1	2	395	4	399
Craftsmen, Production Process Workers and Labourers not elsewhere classified ..	7 & 8	827	54	881	116	1	117	97	..	97	1	..	1	1,041	55	1,096
Service, Sport, Entertainment and Recreation Occupations ..	9	155	60	215	35	4	39	30	1	31	3	..	3	223	65	288

APPENDIX V—contd.

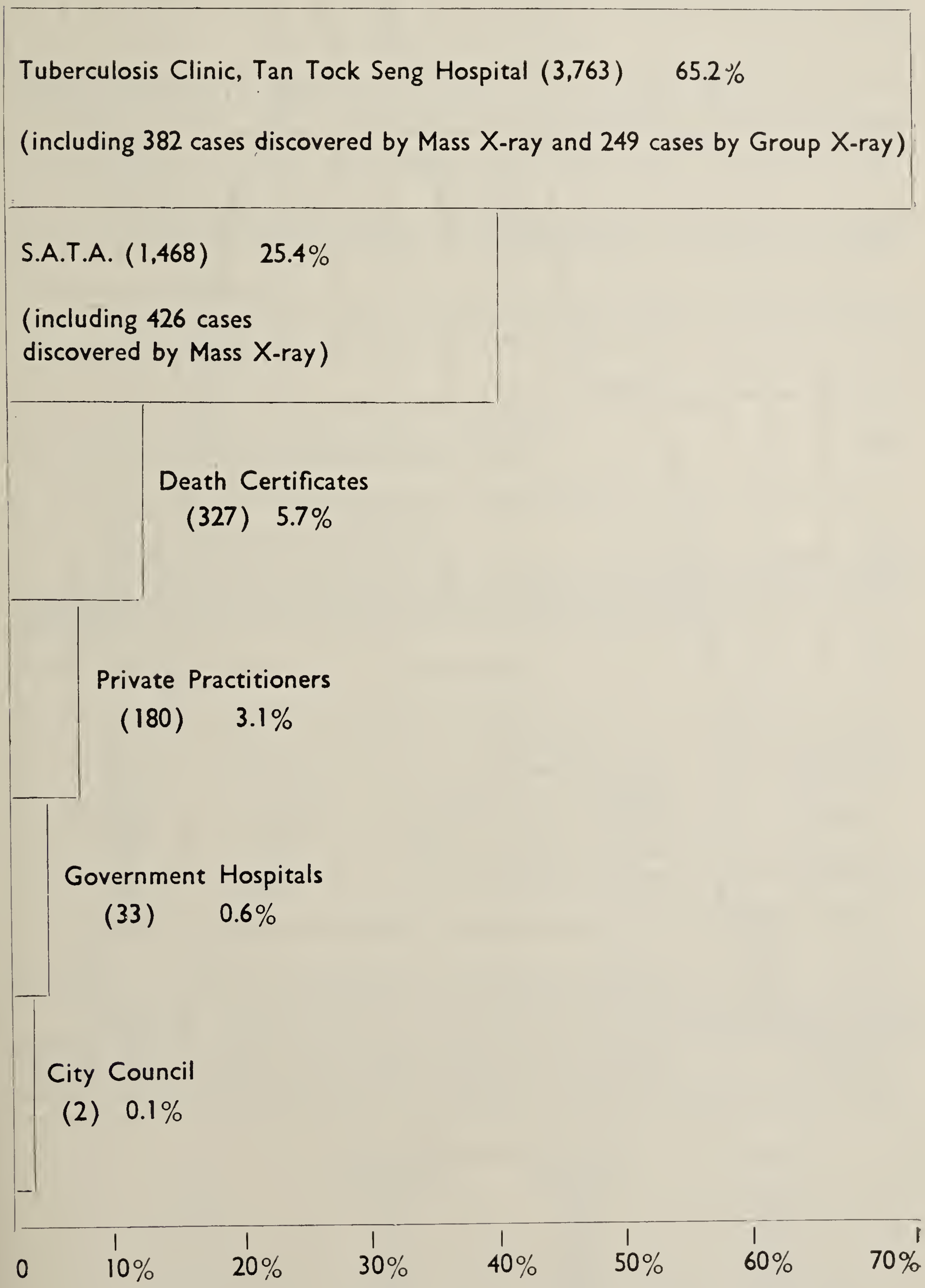
TUBERCULOSIS NOTIFICATIONS FOR THE YEAR ENDING 31ST DECEMBER, 1962

SHOWING OCCUPATION, RACE AND SEX

Occupation	Code	CHINESE			MALAYSIANS			INDIANS AND PAKISTANIS			OTHERS			GRAND TOTAL		
		Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total	Male	Fe-male	Total
PERSONS ECONOMICALLY ACTIVE																
Home Housework	55	14	902	916	1	143	144	..	40	40	..	7	7	15	1,092	1,107
Full Time Student	56	117	68	185	5	5	10	7	4	11	..	..	..	129	77	206
Inmates of Mental Hospitals and Penal Institutions ..	57	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pensioners and Persons with Private Means	58	5	..	5	1	..	1	1	..	1	1	..	1	8	..	8
All Other Economically Inactive (e.g. 'Disabled, 'Too Old', 'Too Young', Inactive'', Etc.),	59	1,032	74	1,106	140	6	146	77	3	80	5	2	7	1,254	85	1,339
Occupation Not Stated ..	11.11	71	..	71	6	..	6	10	..	10	..	..	..	87	..	87
Total ..		3,565	1,212	4,777	464	159	623	286	49	335	27	11	38	4,342	1,431	5,773

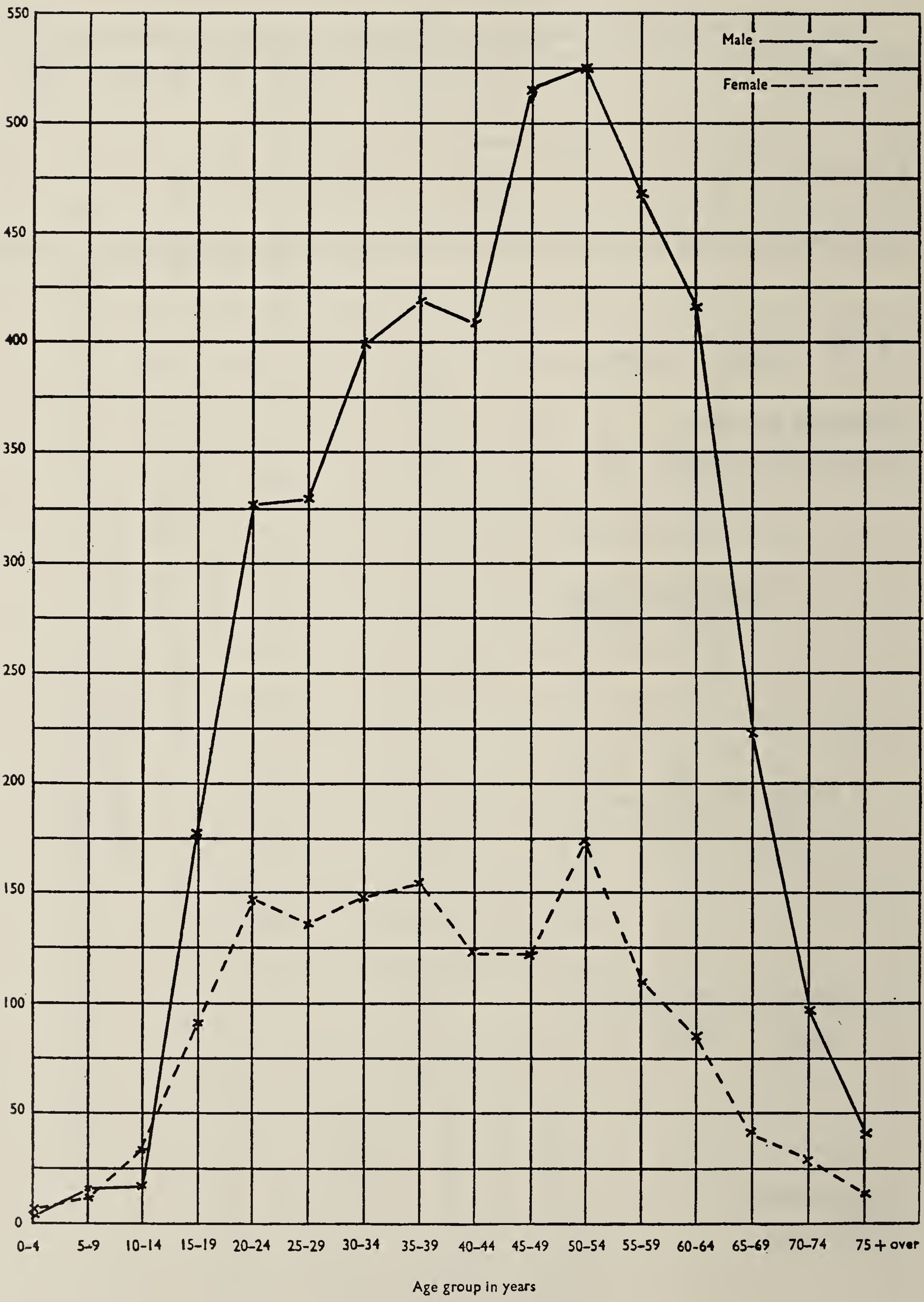
Appendix VI

Histogram showing the source of discovery of cases of tuberculosis as percentage of total notifications for the months January to December, 1962.



As at 31st December, 1962, a total of 5,773 notifications was received.

Graph showing age distribution of Tuberculosis Cases notified in 1962.



Chapter Eighteen

SOCIAL HYGIENE

MIDDLE ROAD HOSPITAL

THE Social Hygiene Department is responsible for the treatment and control of venereal diseases and also for the treatment of skin diseases.

Although there was a slight increase in the incidence of venereal diseases as compared to 1961, the overall figure is still much lower than previous years.

The facilities provided are:

(1) Middle Road Hospital: centrally situated in the City, it maintains a 61-bedded hospital as well as male and female out-patient clinic;

(2) Tanjong Pagar Clinic, Nelson Road: situated in the Dock area, it provides amenities for seafarers as well as the neighbouring populace;

(3) Mobile Dispensaries: one male and two female travelling dispensaries serve the rural areas;

(4) an Epidemiological Control Unit;

(5) a Departmental Serological Laboratory;

(6) an Almoner's Department.

This Department also undertakes the training of medical students, nurses, almoners, midwives and social studies students. Doctors and social workers attended or were attached here also for observation courses.

Table 107

ATTENDANCES

Year	In-patients	Out-patients	Total Attendances
1958	1,125	34,861 (14,997 Females)	197,333
1959	1,349	37,658 (16,723 Females)	218,270
1960	1,130	35,331 (16,513 Females)	201,102
1961	1,179	32,513 (16,397 Females)	202,916
1962	1,285	31,862 (16,854 Females)	197,594

The daily average attendance was 655 based on 297 working days.

INCIDENCE OF VENEREAL DISEASES

There was an increase in the total incidence of V.D. cases accounted for by an increase in syphilis and gonorrhoea cases, as compared to 1961. These figures were however much lower than previous years.

Table 108

Year	Syphilitic Infections	Other V.D. Infections	Total
1958	1,035	4,198	5,233
1959	795	4,043	4,838
1960	860	3,435	4,295
1961	626	2,609	3,235
1962	719	3,449	4,168

Table 109

BREAKDOWN OF SYPHILITIC INFECTIONS

	1958	1959	1960	1961	1962
Primary Syphilis	125	100	198	166	114
Secondary Syphilis	49	26	24	21	13
Early Latent Syphilis	168	143	116	123	212
Late Latent Syphilis	528	394	431	316	330
Congenital Syphilis	26	32	18	11	21

There were two cases of infantile syphilis and 19 cases of congenital syphilis over the age of two years.

Table 110

BREAKDOWN OF TERTIARY SYPHILIS

Nationality	Skin	Joints	Cardio Vascular	G.P.I.	Tables	Neuro	Other	Total
Male								
Chinese	1	..	5	1	3	11	1	22
Indian	..	..	..	..	..	2	..	2
Malaysian	..	..	2	1	..	1	..	4
	1	..	7	2	3	14	1	28
Female								
Chinese	1	..	5	1	..	2	..	9
Indian	..	..	1	..	..	1	..	2
	1	..	6	1	..	3	..	11
Grand Total	2	..	13	3	3	17	1	39

Table 111

RATIO OF TERTIARY SYPHILIS

———	1958	1959	1960	1961	1962
Neuro Syphilis	56.0	49.0	50.7	63.3	59.0
Cardio-Vascular	14.0	15.0	11.6	22.4	33.4
Cutaneous	11.4	9.0	13.0	6.1	5.1
Bones and Joints	18.2	27.0	24.7	8.2	2.5

Table 112

GONORRHOEA AND NON-SPECIFIC URETHRITIS

Year	*Gonorrhoea*	*Gon. Ophthalmia*	*Gon. Compl.*	*Gon. and N.S.U.*	*N.S.U.*	*Total*
1958	2,808	37	6	253	804	3,908
1959	3,027	67	13	268	914	4,289
1960	2,529	106	9	244	773	3,661
1961	1,970	107	9	436	1,472	3,993
1962	2,402	65	1	487	1,127	4,082

Gonorrhoea cases showed an increase but there were fewer cases of non-specific urethritis.

Table 113

BREAKDOWN OF OTHER VENEREAL INFECTIONS

Year	Lymphogranuloma	Soft Sore	Mixed Infections	Granuloma Inguinale
1958	13	1,228	106	..
1959	15	784	137	..
1960	7	692	100	..
1961	16	472	36	..
1962	25	886	70	..

SOCIAL HYGIENE MOBILE DISPENSARY

The following table shows the work done:

Table 114

Clinic	Male	Female	Anti-Natal	V.D. Cases	Investigation Cases	Total
Central						
Yio Chu Kang Upper Serangoon Seletar Paya Lebar	110	3,006	2,972	25	3,091	3,116
Rural West						
Bukit Timah Pasir Panjang Bukit Panjang Holland Road Jurong	165	4,463	4,420	31	4,597	4,628
Rural East						
Kampong Batak Changi Ulu Bedok Siglap	..	4,116	4,092	39	4,077	4,116
	275	11,585	11,484	95	11,765	11,860

Table 115

ANTE-NATAL CASES

Nationality	No. of Ante-Natals	Primipara	Primipara Positive	Multipara	Multipara Positive
Chinese	6,752	890	5	5,862	28
Malaysian	979	127	4	852	1
Indian	3,719	379	..	3,350	28
Eurasian	27	6	..	21	3
Others	7	..	..	7	..
	11,484	1,392	9	10,092	60

EPIDEMIOLOGICAL CONTROL UNIT

The main functions of this unit are case finding, contacting defaulters, follow-up of treated cases, contacting family units, contacting promiscuous women and health propaganda.

14,197 home visits were made to defaulters or contacts of whom 7,638 cases reported.

334 cases were contacted by post of whom 69 attended.

335 new family units were registered. These were either treated or kept under surveillance. The total number of family units on the register was 4,561.

185 girls under the age of 18 were sent by the Social Welfare Department, 13 cases had gonorrhoea and 10 had syphilis.

PROPHYLACTIC TREATMENT

The total number of prostitutes on the register was 1,657, of these 77 were newly registered this year, 19 had gonorrhoea, 18 syphilis and 5 had both. Of the 27 male prostitute on the register 2 had gonorrhoea and 14 had syphilis.

2,280 prophylactic injections were given during the year.

SKIN CLINIC

12,486 new cases and 89,745 repetitions were seen during the year.

Pyoderma, atopic and neurodematitis, contact, occupational and allergic dermatitis, and mycotic infections formed the majority of cases, while cutaneous tuberculosis were also seen.

Twenty-two cases of leprosy were referred to the Irrawady Road Skin Clinic.

ALMONER'S DEPARTMENT

The Almoner reports that the major portion of the work was concerned with financial and material aid, social and moral support, rehabilitation and employment as well as total care of the family.

1,873 cases were interviewed and 299 cases dealt with; 245 cases received fares and 60 families received food parcels.

Table 116

SUMMARY OF WORK DONE IN THE CLINICS

——	*1958*	*1959*	*1960*	*1961*	*1962*
Blood specimens for K.T.	33,983	38,316	37,831	37,420	36,812
C.S.F. for K.T.	198	243	330	480	345
Dark Ground Examinations	3,003	2,308	2,966	3,898	3,102
Smears for Gonorrhoea	26,482	36,432	27,396	28,980	22,763
Smears for Culture	134	49	191	214	121
Trichomonas Examinations	—	—	—	548	4,469
Aqua penicillin G used (3 vials)	3,540 mu	2,113 mu	5,386 mu	945 mu	2,764
Procain (P.A.M.) penicillin (3 vials)	26,808 ,,	25,207 ,,	19,000 ,,	13,965 ,,	4,644
Penidure (Bicillin) (3 vials)	740 ,,	10,976 ,,	8,148 ,,	10,805 ,,	9,168

There were 36 cases of penicillin sensitivity but no deaths were reported.

Table 117

INVESTIGATION CASES

—	*1958*	*1959*	*1960*	*1961*	*1962*
Apprehensive group including ante-natals and contact cases ..	16,545	17,909	13,969	11,488	11,484
Arthritis and Arthralgia ..	942	1,242	2,136	2,168	1,292
Non-Gonococcal urethritis, cervicitis, dysuria, etc.	1,509	980	860	612	417
Trichomonas	..	..	..	439	113
Other genital infestations, warts Balanitis, traumatic ulcers, etc.	922	962	986	921	790
Yaws	15	34	15	29	26
Leprosy	27	12	45	22	24
Non venereal iritis, conjunctivities	299	244	387	402	353
Miscellaneous	376	396	560	459	709
	29,628	32,820	31,036	16,539	15,208

Table 118

SEAMEN

—	Primary	Period not Indcated	Gonorrhoea	Lymphogranuloma	Soft Sore	Mixed Inf.	Non-Specific Urethritis	Skin Cases	Investigation Cases	Granuloma Inguinaies	Total
Chinese ..	..	7	12	..	6	..	5	79	52	..	161
Indian ..	1	..	5	..	..	..	..	8	1	..	15
Malaysian ..	1	2	4	..	1	1	5	13	9	..	36
European ..	..	1	110	2	24	1	200	18	713	..	1,069
Other ..	..	..	1	..	..	..	3	2	..	..	5
	2	10	131	2	31	2	213	120	775	..	1,286

The number of seamen treated during the last five years are as follows:

1958	1959	1960	1961	1962
1.054	1,157	1,200	1,062	1,286

Table 119

MEDICAL, SOCIAL HYGIENE BRANCH, SINGAPORE

TABLE SHOWING TYPE OF V.D. IN MALE AND FEMALE PATIENTS TREATED AT THE MIDDLE ROAD HOSPITAL, TANJONG PAGAR CLINIC AND TRAVELLING DISPENSARIES

—	IN-PATIENTS			OUT-PATIENTS (NEW CASES)				OUT-PATIENTS (REPETITIONS)				OUT-PATIENTS (TOTAL ATTENDANCES)			
	Male	Female	Total	M.R.H. and Tr. Dispy. Male	T.P.C. Male	M.R.H. and Tr. Dispy. Female	Total	M.R.H. and Tr. Dispy. Male	T.P.C. Male	M.R.H. and Tr. Dispy. Female	Total	M.R.H. and Tr. Disp. Male	T.P.C. Male	M.R.H. and Tr. Dispy. Female	Total.
1. Primary	..	5	5	78	36	..	114	1,265	665	90	2,020	1,343	70	90	2,134
2. Secondary	1	..	1	5	7	1	13	334	209	108	651	339	216	109	664
3. Tertiary	35	14	49	23	5	11	39	3,817	361	668	4,846	3,840	366	679	4,885
4. Congenital	3	7	10	7	1	13	21	104	1	250	355	111	2	263	376
5. Period Not Indicated ..	92	133	225	185	81	266	532	7,641	2,418	6,408	16,467	7,826	2,499	6,674	16,999
6. Gonorrhoea	..	72	72	1,286	728	388	2,402	7,399	2,798	3,237	13,434	8,685	3,526	3,625	15,836
7. Gonorrhoea Complications ..	..	1	1	..	..	1	1	..	..	3	3	..	..	4	4
8. Gonorrhoea Ophthalmia ..	..	65	65	..	..	65	65	..	..	..	..	..	..	65	65
9. Soft Sore	..	..	..	553	243	90	886	2,787	1,947	1,008	5,742	3,340	2,190	1,098	6,628
10. Lymphogranuloma	..	..	..	2	15	8	25	..	33	49	82	2	48	57	107
11. Mixed Infections	..	3	3	35	21	14	70	1,142	492	2,102	3,736	1,177	513	2,116	3,806
12. Investigation Cases	19	110	129	1,326	1,753	12,129	15,208	15,314	9,975	3,362	28,651	16,640	11,728	15,491	43,859
13. Skin Cases	305	420	725	5,520	3,098	3,868	12,486	50,714	15,453	23,578	89,745	56,234	18,551	27,446	102,231
14. Total	455	830	1,285	9,020	5,988	16,854	31,862	90,517	34,352	40,863	165,732	99,537	40,340	57,717	197,594

—	IN-PATIENTS			NEW CASES			REPETITIONS		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Chinese	296	675	971	8,104	10,624	18,728	65,150	28,364	93,514
Indian	102	46	148	3,556	1,587	5,143	45,125	3,503	48,628
Malaysian ..	51	98	149	1,716	4,426	6,142	13,998	7,658	21,056
European ..	..	..	..	1,247	..	1,247	743	..	743
Eurasian ..	2	8	10	191	101	292	202	372	574
Others	4	3	7	194	116	310	251	916	1,217
Total ..	455	830	1,285	1,508	16,854	31,862	124,869	40,863	165,732

Table 120

ADMISSIONS AND DISCHARGES

——	Admitted during the Year 1962	Discharged	Transferred	Absconded	Died	Total	Percentage of deaths to total treated	Number of Beds	Average daily number of patients
Male	475	459	..	..	..	459	..	23	18
Female	830	835	1	..	1	819	.08	37	15
Total ..	1,305	1,294	1	..	1	1,278	.08	60	33

Chapter Nineteen

MATERNITY AND GYNAECOLOGY

KANDANG KERBAU HOSPITAL

KANDANG KERBAU Hospital is the only Government institution for maternity and gynæcology services in the State. The private hospitals, the Gleneagles, Mount Alvernia and Youngberg Hospitals have taken off some of its load chiefly of paying patients. Almost the entire gynæcological services and about two-thirds of deliveries in the State are borne by this single hospital of 443 beds.

In it, medical students from the Faculty of Medicine receive their training in midwifery and gynæcology. Nurses and midwives also undergo their training in it for the Certificates of the Midwives Board. During the year, a total of 229 medical students, 59 nurses and 75 pupil midwives were trained in the hospital.

Staff

There were a number of changes in the staff of the hospital during the year. Dr. S. N. Kapur, the Acting Medical Superintendent was transferred to General Hospital on 1st June, 1962 and Dr. Chong Tuck Kwong, L.M.S., M.R.C.O.G., Senior Obstetrician and Gynæcologist, officiated as Medical Superintendent.

When he proceeded on leave on 1st August, 1962 prior to resignation, Dr. Lee Yong Kiat, M.R.C.P. (E.), M.R.C.P., L.L.B. was appointed Acting Medical Superintendent.

The arrival of Professor J. P. McKelvey, M.D., of the University of Minneasota, Minneapolis, U.S.A., as Visiting Professor to the Department of Obstetrics and Gynæcology in the University of Singapore (which includes the University Training (T) Unit in the Hospital) was a welcome addition to the hospital.

Two members of the Royal College of Obstetricians and Gynæcologists Dr. Yeo Oon Hock, who returned from the United Kingdom after no-pay study leave, in April 1962, and Dr. Edward Yenson, who joined the service in September 1962, were welcome additions to the medical staff of this hospital.

Mrs. I. Aeria, Matron, Grade II assumed duty as Acting Matron, Grade 1, Kandang Kerbau Hospital on 13th April, 1962 taking the place of Miss Goh Kim Swee, Matron, Grade I who had retired.

Miss A. Peterson, W.H.O. Tutor in Operating Theatre Technique and Miss D. I. Copcutt, W.H.O. Midwifery Tutor in Midwifery arrived and set up training courses for nursing staff in the respective subjects.

Miss Jane Yong, Sister Tutor in Midwifery returned after study leave in the United Kingdom and replaced Miss M. Piper who had retired from service on medical grounds. Miss Lau Koi Eng returned after study leave and assumed duty as Sister Tutor in Midwifery.

Re-organisation

The re-organisation of the University and Government clinical departments and the out-patient clinics and the opening of all the wards in the hospital, the twin theatres for gynæcology, two theatres for obstetric cases and two minor operating theatres was the highlight of 1962.

The bed-strength of the hospital is 443. 314 beds are allocated for obstetric cases and 129 for gynæcological cases. There are 90 beds in the nurseries of which 42 beds are in the Premature Babies Unit.

The Hospital is divided into two main sections:

(i) the Training Units;
(ii) the Maternity Home Unit and the Paying Ward.

There are three Training units. One unit is known as a University Training Unit and is organised around 52 beds for obstetric cases and 27 beds for gynæcological cases.

The Government section is organised into two clinical training units, A and B (under Mr. T. H. Lean, F.R.C.S.(G.), M.R.C.O.G., and Dr. S. M. Goon, M.R.C.O.G., respectively). Each of these units is organised almost identically with the University Training Unit also with a view to securing recognition of posts for the training of medical officers for the Examination for Membership of the Royal College of Obstetricians and Gynæcologists. Each unit has a total of 48 beds for obstetric cases and 52 beds for gynæcological cases.

Outside these training units 126 beds for maternity cases form another unit where a great bulk of the normal deliveries in the hospital are undertaken. About 65 per cent of the total deliveries in the hospital use these beds and the major part of the work is undertaken by the nursing and midwifery staff. Work is normally overseen by the Government consultant staff. This midwifery section is, in point of fact, equivalent to a maternity home within the confines of the hospital. In this system there are three units where special work is undertaken and where training of suitable officers can be given while the bulk of routine midwifery is undertaken by a separate unit, the Maternity Home Unit.

In addition, there are 54 beds for paying patients — 40 obstetric and 14 gynæcological beds.

The out-patient clinics were also re-organised with the clinical departments. The extension to the dispensary providing for more store area and extra counters was completed during the year and has helped in serving the many patients who attend at the clinic.

As part of the re-organisation a Committee for Post-Graduate Studies was formed to arrange for clinical conferences, post-graduate courses of lectures and symposia and reviews on hospital mortalities. Committees for Cancer and on Surgical Supplies and Drugs have also been formed.

Admissions, Discharges and Deaths.—The summary record of the work load on hospital bed is given in the following table:

Table 121

ADMISSIONS, DISCHARGES AND DEATHS

Maternity	Admitted	Discharged	Transferred	Absconded	Died	Total	Percentage of deaths to total treated	Number of Beds	Average daily number of patients
1st and 2nd Class ..	2,293	2,265	4	..	..	2,269	..	40	30
3rd Class ..	40,727	40,400	20	5	30	40,455	.07	274	302
Total ..	43,020	42,665	24	5	30	12,724	.07	314	332
GYNÆCOLOGY									
1st and 2nd Class ..	539	531	1	..	1	533	.02	14	4
3rd Class ..	6,214	6,115	49	6	54	6,224	.09	115	63
Total ..	6,753	6,646	50	6	55	6,757	.08	129	67
Grand Total ..	49,773	49,511	74	11	85	49,711	.02	443	399

Maternity Section.—The increase in the number of deliveries undertaken continues. Although there has been a slight drop in the total number of births in Singapore, the births undertaken at the hospital have increased in numbers. This means that a larger proportion of deliveries are being undertaken by the hospital. Nearly two out of every three babies born in Singapore are deliverd in the hospital:

Table 122

	1958	1959	1960	1961	1962
In-patients	39,761	44,736	48,272	48,880	49,773
Deliveries	30,146	33,709	36,267	36,590	37,861
Percentage Deliveries/Patients	76	75	75	75	76
Total live Births, Singapore ...	62,495	62,464	61,775	59,941	59,084
Percentage Births in Kandang Kerbau/Total Singapore ...	48	54	59	61	64

Of the total deliveries of 37,861, 6,852 were abnormal.

The following information on special deliveries may be of interest:

Table 123

	Nos.	Rate Per cent
Forceps Deliveries	478	1.5
Vacuum Extractions	113	
Cæsarean Sections	668	1.7
Breech Deliveries	1,109	2.9
Twin Deliveries	239	0.9
Triplets Deliveries	4	

Mortality Rates.—The following are the mortality rates calculated on the number of cases dealt with in the hospital:

Table 124

	Nos.	Rate (per thousand)
Maternal Deaths	27	0.6
Still-Births	555	14.3
Peri-Natal Deaths	848	22.3

Domiciliary Delivery Service.—A small number of deliveries were undertaken in patients' homes. This is because patients generally do not prefer to be delivered at home and many homes are unsuitable for delivering of mothers. A total of 1,722 cases were attended by the service, of which 32 had to be transferred to the hospital due to complications during the delivery.

Domiciliary After-Care Service.—The After-care Service is provided chiefly because mothers and infants are discharged very soon after delivery in the hospital. During the year 12,783 cases were cared for and the number of visits paid by the staff were 71,878.

Gynæcological Section.—There were 6,753 in-patient gynæcological cases. Major operations number 1,217 and minor operations 7,137. A good number of these minor operations were done on out-patients.

Pædiatric Section.—The staff comprises of a pædiatrician who is the Professor of Pædiatrics and a Postgraduate Fellow in Pædiatrics from the University Department of Pædiatrics in the General Hospital. They are responsible for the premature nurseries unit as well as for the follow-up clinic for prematures and abnormal neonates, which is held twice a week in the afternoons.

Infants of birth weights less than 4 lb. are placed in the premature nurseries. The admission and mortality for the different weights is given in the following table:

Table 125

Birth Weight	Admissions	Deaths	Per cent Mortality
400 — 1000G	16	16	100
1000 — 1500G	335	265	79
1500 — 2000G	713	183	25.6
2000 — 2272G	807	50	6.2
More than 2272G	186	55	29

The weights are given in the metric system to conform with international reports. The major cause of deaths is due to prematurity followed by intracranial haemorrhage, pulmonary syndrome of the newborn, and bronchopneumonia.

The number of cases attending at the out-patient clinics continues to increase:

Table 126

	1960	1961	1962
New cases	834	1,427	3,640
Repeat cases	1,676	3,255	5,523

Chapter Twenty

TRAFALGAR HOME

Trafalgar home is an institution for the segregation and treatment of persons suffering from leprosy. It comprises about 25 acres and consists of hospital ward blocks (the infirmary section) and outbuildings of varying sizes for the accommodation of the ambulant patients. The Home can accommodate over 1,000 patients but the number of patients are gradually dropping and now number about 700 in all.

Patients are admitted only if lepræ bacilli are found in their lesions. Admission and discharge of such patients is controlled by the Leprosy Board. The "infectious" case is discharged only when smears from the skin lesions are found free of lepræ bacilli on four different occasions and taken at consecutive months. Other patients may be admitted if they require hospital treatment for complications due to the disease.

An out-patient clinic is run by the Home for the treatment of the "non-infectious" case and for the follow-up of cases discharged from the Home. A contact service for the surveillance of contacts of patients is centred in this clinic. A central registry of leprosy cases in the Singapore is kept at this clinic.

Staff.—The majority of the staff for the Home is drawn from the patients themselves. Most are engaged in the unskilled jobs, but there are also artisans, dressers and nurses, dispensing assistants and laboratory technicians. Payment of allowances is on similar scales of equivalent grades in Government service.

Patients.—The number of "positive" patients admitted has shown a slight decrease over the years. The encouraging feature is the larger numbers that are discharged. This is due entirely to the use of the anti-leprosy drugs for the treatment of leprosy.

The new cases are discovered by the contact service, and also at other clinics and institutions. No case finding surveys have been undertaken.

Table 127

PATIENTS ON 31ST DECEMBER, 1962

BY RACE AND SEX

Race	Males	Females	Total
Chinese	408	169	577
Indians	32	6	38
Malays	29	9	38
Eurasians	1	1	2
Europeans	1	—	1
Total ...	471	185	656

Table 128

PATIENTS ON 31ST DECEMBER, 1962

ADULTS AND CHILDREN (UNDER 12 YEARS OF AGE)

Males		Females		Total
Adults	Child	Adults	Child	
406	65	164	21	656

Table 129

ADMISSIONS AND DISCHARGES

	Males	Females	Total
Total patients remaining on 31-12-61 ...	510	195	705
Admissions	220	68	288
Discharges	224	75	299
Absconsions	20	1	21
Transferred to other hospitals	43	13	56
Transferred from other hospitals ...	36	14	50

Table 130

ADMISSIONS IN 1962—BY RACE

—	Chinese		Indians		Malays		Eurasians		Total		Total No.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Adults ..	161	53	27	3	8	5	..	1	196	62	258
Child ..	23	6	..	..	1	..	..	..	24	6	30
								Total ..	220	68	288

Table 131

ADMISSIONS IN 1962—BY CAUSE

	Males	Females	Total
New positive cases	80	29	109
Formerly absconded cases returned ...	13	—	13
Relapses	12	4	16
Repatriated cases re-admitted	—	1	1
Negative cases for ulcers, orthopaedic treatment, employment, etc.	115	34	149
Total ...	220	68	288

Table 132

DISCHARGES IN 1962

	Males	Females	Total
Formerly positive cases discharged by Board 1962	69	32	101
Formerly positive cases discharged by Board in previous years	7	2	9
Conditional discharge	46	7	53
Negative cases	102	34	136
Total ...	224	75	299

DENTAL SERVICE

Dental treatment is given to all patients as well as to the out-patients. A dental officer attends the patients at the dental clinic attached to the Home. Work is chiefly in treatment of caries, but minor oral surgery is done as well as fixing of dentures.

OCCUPATIONAL THERAPY

The work in this department helps patients to pass away their time. For those with disability it provides exercise to promote manual dexterity. It is also an opportunity to earn some "pocket money".

Out-patients are also allowed to work in the department; some are provided with materials to work at home. Home visits are made regularly to provide these persons with materials and collect the finished articles.

Rattan work forms the major work done by the male patients and sewing, embroidery, is done chiefly by the female patients. Sale of articles brought in $14,224.10. Allowances paid to the patients for their work amounted to $8,679.15.

PHYSIOTHERAPHY DEPARTMENT

The former patient Mr. Ch'ng Jee Bah who had been trained in this work died on September 1962 and the department had to be closed. Another patient is now training in the Physiotherapy Department of the General Hospital and when he completes training the department can function again.

LORONG BUANG KOK SCHOOL

Two schools sessions are run: morning session are for the English school and afternoon session are for the Chinese school. The staff consists of trained teachers, while a few are patients. Two trained teachers were appointed to the school during the year. It is difficult to keep the good teachers, and to run classes in which the pupils are of a wide age range. The number on the roll is 99 (75 boys and 24 girls).

One of the two students who sat for the Chinese Secondary Examination was successful; three students will be sitting for the Senior Cambridge Examinations this year and another seven will probably be candidates in 1963.

ALMONER'S DEPARTMENT

Mr. Pang Eng Huat who has been working in the Home for over five years was transferred to the Almoners' post at the Chronic Sick Hospital. This was a big loss.

The work of the Department is peculiar in two aspects. The first is with the segregated patient to help him to adjust to the confines of the Home away from the family; the care of the family left without its breadwinner or mother; and if the patient is a child to arrange for his schooling. The second and probably the more difficult, is the rehabilitation of the discharged patient for there is still fear of the leprosy patient. This is harder in the case of the disabled and the scarred one who has been away from work for a long time.

As in previous years the Department has been greatly helped by large donations of food from the United States of America. Over 500 families a month are assisted with rations. Considerable help is also given by the Red Cross, Seletar, the Armed Service and many friends of Trafalgar Home both in Singapore and abroad.

The Singapore Leprosy Relief Association continue to assist the patients particularly with the schooling of our patients. It is interesting to note that children helped over the years in this way are now training for professional and commercial careers.

Owing to the re-introduction of conditional discharge the number of home visits done monthly increased considerably as special social reports must be placed before the Leprosy Board.

Six children of patients were fostered out. They and the foster parents were kept under constant supervision of the almoners.

IRRAWADDY ROAD SKIN CLINIC

Clinic sessions are held every afternoon of weekdays, and an additional session is held late on Wednesday evenings for office workers. Attendances are about 45 — 50 a day.

The number of patients registered in 1962 was 263. This brings the total number of registered patients, kept since 1951, to 4,992.

During the mornings the clinic staff checks on contacts of patients and visits the homes of patients. Children of patients who have negative reactions to Tuberculin tests are given B.C.G. vaccination and those with positive reactions have their chests X-rayed.

Chapter Twenty-one

PSYCHOLOGICAL MEDICINE

WOODBRIDGE HOSPITAL

WOODBRIDGE HOSPITAL is a mental hospital of 2,000 beds. It also runs an out-patient service for milder psychiatric illnesses and follow-up treatment for those discharged from the hospital.

The total number of admissions was 2,742 for 1962 against 2,558 for 1961. The average number of patients at Woodbridge Hospital was 2,651.21 in 1962 against 1961.

Table 133

IN-PATIENT: ADMISSIONS AND DISCHARGES

	Male	Female	Total
Number Admitted	1,604	1,138	2,742
Forms of Admission:	Male	Female	Total
(*a*) Observation	1,519	1,128	2,647
(*b*) Certified	...	...	...
(*c*) Voluntary	40	10	50
(*d*) Remand	35	...	35
(*e*) Criminal Lunatic ...	8	...	8
(*f*) Vagrant	2	...	2
Total ...	1,604	1,138	2,742
Number discharged	1,268	824	2,092
Absconded	—	—	—
Deaths	52	29	81

Table 134

ADMISSIONS AND DISCHARGES

—	Admitted during the Year 1962	Discharged	Transferred	Absconded	Died	Total	Percentage of deaths to total treated	No. of beds	Average daily number of patients
							%		%
Male	1,604	1,268	..	..	52	1.320	1.70	1,241	1,617.66
Female	1,138	824	..	..	29	853	1.44	628	1,033.55
Total ..	2,742	2,092	..	..	81	2,173	1.60	1,869	2,651.21

Table 135

DISTRIBUTION BY RACE

Racial Group	Admissions	Discharged and Absconded	Deaths
Chinese	2,081	1,585	71
Indians and Pakistanis ...	427	320	7
Malays	175	144	2
Eurasians	31	20	1
Europeans	17	17	—
Others	11	6	—
	2,742	2,092	81

Table 136

IN-PATIENT DISTRIBUTION BY DIAGNOSIS

Cause Groups (Diseases)	Remaining at end of 1961	Admissions 1962	Deaths 1962	Total cases treated	Remaining at end of 1962	Absconded and Discharged 1962
Psychoses:—						
Schizophrenic disorders (dementia praecox)	1,266	1,556	28	2,822	1,966	828
Maniac-depressive ..	535	689	14	1,224	287	923
Involutional melancholia	17	16	1	33	22	10
Paranoia and paranoid states	36	38	2	74	50	22
Senile psychoses ..	165	194	15	359	170	174
Other and unspecified psychoses ..	33	41	16	74	24	36
Psychoneuroses and disorders of personality:—						
Hysterical reaction ..	9	5	1	14	6	7
Neurotic-depressive ..	107	130	..	237	171	66
Alcoholism ..	..	15	..	15	12	3
Other drug addiction ..	2	5	..	7	3	4
Other psychoneuroses and disorders of personality ..	7	14	2	21	18	1
Mental deficiency ..	152	39	2	191	169	20
Total ..	2,329	2,742	81	5,071	2,898	2,092

Staff.—The staff consists of ten doctors including two specialists, 149 nurses (male and female of all grades), three occupational therapists and a social worker. Two medical officers are now receiving psychiatric training in the University of London.

THE PSYCHIATRIC NURSING SCHOOL

The Psychiatric Nursing School had 73 students under training. All 35 students were successful in their State Final Examination.

THE PSYCHIATRIC SOCIAL WELFARE DEPARTMENT

There is only one psychiatric social worker in the department. There are two students on Government scholarship receiving training in psychiatric social work at the University of Singapore.

PSYCHIATRIC OUT-PATIENT CLINICS

Four separate clinics are run in various centres in the island. Attendances have shown a progressive increase. In 1962 the total attendances were 16,668 compared with 13,789 attendances in 1961. About 86 per cent of these attendances were of "old" cases, newly registered patients formed 14 per cent of attendances.

Table 137

DISTRIBUTION BY RACE

PSYCHIATRIC OUT-PATIENTS

Race	General Hospital	Paya Lebar Clinic	Kallang Clinic	Bukit Timah Clinic	Total
Chinese ..	8,587	2,381	2,782	898	14,648
Indians ..	740	142	145	94	1,121
Malays ..	357	79	192	40	668
Eurasian ..	100	43	60	..	203
European ..	6	..	..	..	6
Other Asians ..	10	3	9	..	22
Total ..	9,799	2,648	3,189	1,032	16,668

Table 138

DISTRIBUTION BY AGE

PSYCHIATRIC OUT-PATIENTS

Years	Psychiatric Out-Patient Dept. General Hospital	Psychiatric Out-Patient Dept. Paya Lebar Clinic	Psychiatric Out-Patient Dept. Kallang Clinic	Psychiatric Out-Patient Dept. Bukit Timah Clinic	Total	Percentage of Total
0—10 ..	76	9	1	1	87	0.52
11—20 ..	1,543	286	373	101	2,303	13.80
21—30 ..	2,978	980	1,135	314	5,407	32.50
31—40 ..	2,602	665	805	293	4,365	26.20
41—50 ..	1,509	398	509	193	2,609	15.60
51—60 ..	878	248	276	102	1,504	9.03
61—70 ..	163	45	64	26	298	1.78
71—80 ..	48	17	20	2	87	0.52
81—90 ..	2	..	6	..	8	0.05
Total ..	9,799	2,648	3,189	1,032	16,668	100.00

Table 139

DISTRIBUTION BY SEX

PSYCHIATRIC OUT-PATIENTS

Sex	General Hospital	Paya Lebar Clinic	Kallang Clinic	Bukit Timah Clinic	Total
Male	4,758	1,230	1,632	530	8,150
Female ..	5,041	1,418	1,557	502	8,518
Total ..	9,799	2,648	3,189	1,032	16,668

Table 140

DISTRIBUTION BY DIAGNOSIS

PSYCHIATRIC OUT-PATIENTS

——	Psychiatric Out-Patient Dept. General Hospital	Psychiatric Out-Patient Dept. Paya Lebar Clinic	Psychiatric Out-Patient Dept. Kallang Clinic	Psychiatric Out-Patient Dept. Bukit Timah Clinic	Total	Percentage of Total
Psychoses:—						
Schizophrenia Disorders (Dementia praecox) ..	4,106	1,745	1,959	612	8,422	50.53
Manic Depressive ..	179	102	53	48	382	2.30
Involutional Melancholia	19	5	17	3	44	0.26
Paranoid and Paranoid States	70	6	32	1	109	0.66
Senile Psychoses	46	24	46	3	119	0.71
Other and Unspecified Psychoses ..	320	106	66	88	580	3.49
Psychoneuroses and Disorders of Personality:—						
Hysterical Reaction ..	151	5	12	22	190	1.14
Neurotic Depressive Reaction	788	237	271	104	1,400	8.40
Alcoholism ..	..	..	..	..	..	..
Other Drug Addictions ..	5	..	2	2	9	0.05
Others and Unspecified Psychoneurotic Reaction and Disorders of Personality ..	161	35	17	31	244	1.46
Mental Deficiency:-						
Others and Unspecified Mental Deficiencies ..	125	39	67	6	237	1.42
N.Y.D. Observational	3,829	344	647	112	4,932	29.59
Total ..	9,799	2,648	3,189	1,032	16,668	100.00

MENTAL DEFECTIVE UNIT

This unit is formed of two blocks of wards within the Woodbridge Hospital, but are quite separate. The wards were built for children and admissions are for mentally defective children who require hospital care. This system generally excludes the higher grade mentally defective. Even so, with the 45 beds available and the few discharges, the numbers that can be admitted are very small and there is a large waiting list for admissions.

Table 141

ADMISSIONS AND DISCHARGES

——	Admitted during the Year 1962	Discharged	Transferred	Absconded	Died	Total	Percentage of deaths to total treated	No. of beds	Average daily number of patients
Male	1	3	..	..	..	3	..	Cots 2 Child 31	15.81
Female ..	3	..	..	..	2	2	6.67	Adults 13	27.62
Total ..	4	3	..	..	2	5	4.26	46	43.43

CHRONIC SICK UNIT

The Chronic Sick Unit is in a ward block within the Woodbridge Hospital compound. This block forms one of four hospital blocks which are a hospital unit by itself. But there is insufficient space for expansion or for other hospital services, such as for kitchens and offices, so that the future Chronic Sick Hospital cannot be developed around these blocks. Thirty-five beds only were staffed during the year. The table below gives a summary of the admissions and discharges of the Unit.

Table 142

ADMISSIONS AND DISCHARGES

——	Admitted during the Year 1962	Discharged	Transferred	Absconded	Died	Total	Percentage of deaths to total treated	No. of beds	Average daily number of patients
Male	19	3	..	..	10	13	34.48	16	15.81
Female ..	6	2	..	..	5	7	20.83	19	27.64
Total ..	25	5	..	..	15	20	28.30	35	43.45

Chapter Twenty-two

INFECTIOUS DISEASES

MIDDLETON HOSPITAL

THE hospital for the treatment of infectious diseases has a bed capacity of 250 beds. The resident medical officer also acts as the Medical Superintendent. Dr. Leong Kwok Wah resumed his duties of this post on 5th March, 1962 after he had successfully completed the course of studies for the Diploma in Public Health. The City Council doctors who work in the City Council Public and Staff Dispensaries are on a roster of duties for emergency calls from the hospital outside normal working hours.

Admissions.—Table 143 below gives the number of admissions and discharges for the year.

Table 143

NUMBER OF ADMISSIONS, DAYS IN HOSPITAL AND DEATHS BY ETHNIC GROUP

Ethnic Group	REMAINING 1961		ADMITTED 1962		TOTAL	TOTAL	Deaths
	No. of Patients	No. of Days in Hospital	No. of Patients	No. of Days in Hospital	No. of Patients	No. of Days in Hospital	
Europeans	..	..	6	60	6	60	..
Eurasians	..	..	62	418	62	418	..
Chinese	110	9,779	2,864	29,872	2,974	39,651	24
Indians and Pakistanis	32	1,983	1,168	10,072	1,200	12,055	4
Malays	8	122	736	6,603	744	6,725	5
Javanese	..	..	40	552	40	552	..
Others	1	2	60	829	61	831	..
Total ..	151	11,886	4,936	48,406	5,087	60,292	33

Average daily number of patients 167.

Table 144

ADMISSIONS, TRANSFERS, AND DEATHS BY SEX GROUP

——	Remaining 1961	Admitted 1962	Transfer to other Hospital	Died	Remaining 1962	Deaths
						%
Male	79	3,057	14	18	83	0.59
Female	72	1,879	3	15	57	0.8
Total ..	151	4,936	17	33	140	0.67

Table 145

ADMISSIONS OF THE MORE IMPORTANT INFECTIOUS DISEASES DURING THE LAST 10 YEARS

——	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Amoebic Dysentery ..	134	122	136	126	197	156	112	249	261	285
Bac. Dysentery	25	18	17	26	74	60	36	70	96	118
Chickenpox ..	836	1,313	1,769	1,488	1,039	472	987	1,453	975	1,249
Clinical Dysentery	16	34	35	63	150	92	68	161	224	219
Cerebro Spinal Meningitis ..	4	2	..	..	..	4	..	..	..	..
Diphtheria ..	332	345	460	552	712	547	519	642	587	1,063
pipelas ..	..	3	..	2	3	1	..	3	..	3
Measles ..	117	182	200	301	153	357	146	178	318	403
Mumps ..	9	35	54	52	14	43	47	55	47	42
Pneumonia ..	..	..	..	..	..	1	4	3	1	..
Plague ..	..	..	..	..	..	..	..	..	..	..
Poliomyelitis ..	41	70	19	37	52	405	66	201	48	12
Rubella ..	..	1	..	86	36	7	9	16	5	14
Scarlet Fever ..	..	..	..	..	1	..	..	..	..	..
Smallpox ..	..	..	..	..	..	..	10	..	..	..
Tropical Typhus	4	7	..	1	..	1	..	..	..	..
Typhoid Fever ..	91	125	114	76	118	127	160	174	155	103
Whooping Cough	..	10	5	85	30	38	15	39	23	37
Cholera ..	..	..	..	..	..	..	..	..	..	..
Other Diseases/ Carriers ..	440	647	503	936	1,083	1,368	1,272	1,680	1,187	1,388
Total ..	2,049	2,914	3,312	3,831	3,662	3,679	3,451	4,924	3,927	4,936

Dangerous Infectious Diseases.—There were no cases of smallpox, plague and cholera during the year.

DIPHTHERIA

There were 1,063 admissions, the highest ever recorded. The marked increase was due to the large number of nasal (579) and aural (131) cases sent in from the various Out-patient and Maternal and Child Health clinics. During the height of this episode which occurred during the period from March to October, it was not unusual for 20 — 25 of such cases to be admitted a day. Towards the latter part of this period, virulence tests showed that the majority of KLB organisms isolated from such cases were avirulent. With this finding, the episode which had put a tremendous strain on hospital beds and the ambulance service was brought to a close.

If the nasal and aural cases are excluded, the number of clinical cases showed a decrease towards the latter half of the year. This was probably due to the compulsory immunization of children against diphtheria which was introduced during the year.

There were 13 deaths from diphtheria giving a mortality rate of 1.2 per cent, the lowest recorded. The low mortality was due in large measure to the large number of nasal and aural cases which were without fatalities.

Fifteen cases required tracheotomy for respiratory obstruction and of these six cases died, showing that these cases were brought in during the last stages of the disease. The other seven deaths occurred in very toxic cases with extensive pharyngeal involvement.

Table 146

DIPHTHERIA ADMISSIONS AND DEATHS FOR THE LAST 10 YEARS

Year	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Admissions ..	332	345	460	552	712	548	519	642	587	1,063
Deaths ..	47	34	41	47	58	34	23	32	27	13
Mortality rate ..	14.15	9.86	8.91	8.51	8.14	6.20	4.43	4.98	4.6	1.2

Table 147

MONTHLY DIPHTHERIA ADMISSIONS AND DEATHS FOR 1962

——	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	53	47	126	180	79	55	100	111	123	97	39	53	1,063
Deaths ..	1	1	1	1	..	1	2	..	..	2	3	1	13

Table 148

DISTRIBUTION OF DIPHTHERIA BY MONTH AND LOCALITY

——	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	43	42	119	171	64	43	96	90	110	81	35	48	942
Rural ..	10	4	7	9	15	12	4	21	13	16	4	5	121
Total ..	53	47	126	180	79	55	100	111	123	97	39	53	1,063

Table 149

DIPHTHERIA ADMISSIONS AND DEATHS BY AGE AND SEX GROUP

Age Group	ADMISSIONS		Total Admissions	DEATHS		Total Deaths
	Male	Female		Male	Female	
Under 1 year ..	100	74	174	..	..	..
1 year ..	85	68	153	1	1	2
2 years ..	120	101	221	1	..	1
3 years ..	72	70	142	4	1	5
4 years ..	51	49	100	1	1	2
5 years ..	42	35	77	..	1	1
6—10 years ..	57	74	131	..	2	2
11—15 years ..	17	26	43	..	..	..
16—20 years ..	1	9	10	..	..	..
21 years plus ..	3	9	12	..	..	..
Total ..	548	515	1,063	7	6	13

Table 150

DIPHTHERIA ADMISSIONS AND DEATHS BY ETHNIC GROUP

Ethnic Group	ADMISSIONS		Total Admissions	DEATHS		Total Deaths
	Male	Female		Male	Female	
Europeans ..	..	..	..	..	..	..
Eurasians ..	3	3	6	..	..	..
Chinese ..	423	380	803	7	5	12
Indians ..	49	49	98	..	..	..
Malays/Javanese	71	82	153	..	1	1
Others ..	2	1	3	..	..	..
Total ..	548	515	1,063	7	6	13

Table 151

DIPHTHERIA: CLINICAL TYPES OF CASES

Type	Admissions	Deaths
Laryngeal	25	6
Pharyngeal	87	7
Faucial	220	...
Aural	131	...
Nasal	579	...
Cutaneous	17	...
Oral	4	...
Total ...	1,063	13

Table 152

DIPHTHERIA: TRACHEOTOMY OPERATIONS

Number of Tracheotomies done	15
Percentage of cases requiring Tracheotomies	1.4%
Number of Deaths after Tracheotomy	6
Case fatality after Tracheotomy	40.0%

Diphtheria Carriers.—A total of 394 contacts were admitted and treated as diphtheria carriers.

ACUTE ANTERIOR POLIOMYELITIS

There was a fall in the number of cases admitted during the year. Twelve cases were admitted with one death. The fatal case occurred in an Indian girl of eight years who was admitted with severe respiratory paralysis and bulbar involvement.

During the year, a successful mass immunization campaign using oral Sabin Vaccine was carried out by the Health Ministry among children aged six months to six years. After the campaign was launched no cases of poliomyelitis were reported (from July to November) but in December two cases were admitted.

Table 153

POLIOMYELITIS: ADMISSIONS AND DEATHS DURING THE LAST 10 YEARS

Year	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Admissions ..	41	71	19	29	52	404	66	201	48	12
Deaths ..	5	2	2	..	..	12	3	6	5	1

Table 154

POLIOMYELITIS: ADMISSIONS AND DEATHS BY MONTH

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	3	1	1	3	1	1	..	..	..	..	..	2	12
Deaths ..	..	..	..	..	..	1	..	..	..	..	..	..	1

Table 155

REGIONAL DISTRIBUTION OF POLIOMYELITIES CASES BY MONTH

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	2	1	1	1	1	..	..	..	..	..	..	2	8
Rural ..	1	..	..	2	..	1	..	..	..	..	..	..	4
Total ..	3	1	1	3	1	1	..	..	..	..	..	2	12

Table 156

AGE, SEX AND ETHNIC GROUPS OF POLIOMYELITIS CASES

(Deaths within brackets)

Age Group	Europeans		Eurasians		Chinese		Indians		Malays		Others		Total	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 year ..	..	..	..	..	1	1	..	..	..	..	..	..	1	1
1 year ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2 years ..	..	..	..	..	2	..	..	..	..	..	..	..	2	..
3 years ..	..	..	..	..	..	2	..	..	..	..	..	..	..	2
4 years ..	..	..	..	..	..	..	..	..	1	..	..	..	1	..
5 years ..	..	..	..	..	1	..	..	1	..	..	..	..	1	1
6—10 years ..	..	..	..	..	1	1	..	1(1)	..	..	..	..	1	2
11—15 years ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16—20 years ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21 years plus ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	..	..	..	..	5	4	..	2(1)	1	..	..	..	6	6

TYPHOID FEVER

Hundred and three cases of typhoid fever were admitted with one death. The fatality occurred in a Chinese adult who was admitted in a late stage of the disease with hæmorrhage and perforation. There has been no increase in the number of typhoid cases admitted although the number of hawkers is steadily increasing.

Table 157

TYPHOID FEVER—ADMISSIONS AND DEATHS BY ETHNIC GROUP, AGE AND SEX (Deaths in brackets)

Age	0—10		11—19		20+		TOTAL	
Sex	Male	Female	Male	Female	Male	Female	Male	Female
Europeans ..	..	..	..	..	..	..	..	..
Eurasians ..	..	1	..	..	..	..	..	1
Chinese	7	6	8	5	25 (1)	13	40	24
Indians	1	5	2	2	2	2	5	9
Malays	..	2	6	4	8	2	14	8
Javanese ..	1	..	..	..	1	..	2	..
Total ..	9	14	16	11	36 (1)	17	61	42

Table 158

TYPHOID FEVER: ADMISSIONS AND DEATHS BY MONTH

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	19	14	11	3	11	9	2	4	9	11	4	6	103
Deaths ..	..	..	..	..	..	..	..	..	..	1	..	..	1

TYPHOID CARRIERS

During the year a total of 475 persons from ice-cream factories, dairy farms and the water department were investigated for the exclusion of the typhoid carrier state. No carriers were detected.

CHICKENPOX

1,246 cases were admitted during the year with no deaths. The largest number of admissions was as usual among the members of the Indian community.

Table 159

CHICKENPOX ADMISSIONS BY AGE, SEX AND ETHNIC GROUPS

Age	0—10		11—19		20+		Total		Total
Sex	M.	F.	M.	F.	M.	F.	M.	F.	
Europeans	..	..	..	..	..	..	..	..	..
Eurasians	3	5	4	4	5	3	12	12	24
Chinese	52	22	36	29	99	44	187	95	282
Indians	90	56	115	60	368	69	573	185	758
Malays	26	17	24	14	55	5	105	36	141
Javanese	1	2	4	3	8	2	13	7	20
Others	6	..	1	..	9	5	16	5	21
Total ..	178	102	184	110	544	128	906	340	1,246

Table 160

CHICKENPOX CASES: REGIONAL DISTRIBUTION BY MONTH

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	64	117	193	148	114	58	75	78	90	83	97	88	1,205
Rural ..	4	3	7	2	2	3	4	1	2	6	5	2	41
Total ..	68	120	200	150	116	61	79	79	92	89	102	90	1,246

DYSENTERY

There were 622 admissions with three deaths. 285 cases had amœbic dysentery and 124 cases had bacillary dysentery while in 219 cases no dysentery organisms were isolated. Six cases had both amœbic and bacillary dysentery simultaneously.

Table 161

Type of Cases	Admissions	Deaths
Amœbic Dysentery	277	3
Amœbic Dysentery with P.T.B.	1	—
Amœbic Dysentery with Perforation ...	1	—
Amœbic + Bac. Dysentery	6	—
Bac. Dysentery:		
(*a*) Sonne	31	—
(*b*) Flexner	87	—
Clinical Dysentery	218	—
Clinical Dysentery with P.T.B.	1	—
Total ...	622	3

Dysentery Carriers.—Nine Bacillary Dysentery carriers (Flexner) were admitted during the year. They were detected at the Naval Base Hospital during routine examination of applicants for the job of domestic servant. Investigations showed that two of them were in fact not carriers but had passed off someone else's stool as their own. This practice is by no means uncommon where specimens are obtained from people without adequate supervision.

MEASLES

403 cases of Measles were admitted with 11 deaths, of these 75 cases had Brochopneumonia with seven deaths. 16 cases had gastro-enteritis with three deaths. There was one death in a case with encephalitis.

Chapter Twenty-three

RADIOLOGY

THE DEPARTMENT consists of two sections: the Radiodiagnostic and Radiotherapeutic sections. Other hospital departments of diagnostic radiology are really sub-departments of the main one in the General Hospital.

The staff of the department is as follows:

Table 162

	Radiologists	*Radiotherapists*	*Radiographers*	*X-Ray Assistants*	*Jr. Photographic Assistants*
General Hospital ..	5	3	18 (Diagnostic) 4 (Therapeutic)	1	14
Tan Tock Seng Hospital	—	—	2	—	8
Kandang Kerbau Hospital ..	—	—	1	—	2
Institute of Health	—	—	1	—	2
Woodbridge Hospital	—	—	1	—	2
T.B. Control ..	—	—	1	—	3

A further all round increase of X-ray examinations for all institutions was recorded for the whole year, the figure being 225,851 for 1962 as against 200,613 for 1961, (12.6 per cent increase). Another 52,749 miniature X-rays were done in the Mass Surveys conducted by the A.D.M.S. (T.B.). The grand total therefore comes to 278,600 (as against 250,964 for 1961).

The number of cases treated in the Radiotherapy Department also appreciably increased (705 cases for 1962 as against 590 for 1961, i.e. a 20 per cent increase). More cases could have been treated were there no interruptions due to renovation of the Radiotherapy Section as well as machine breakdowns.

Number of cases radiographed in the various hospitals (diagnostic).—The number of examinations carried out is shown in the following table (compared with figures for 1961):

Table 163

	1962	1961	Increase	Percentage
General Hospital ...	... 98,474	83,588	14,886	17.8
Tan Tock Seng Hospital	... 92,419	85,576	6,843	8.0
Kandang Kerbau Hospital	. 6,903	5,673	1,230	21.7
Woodbridge Hospital	... 3,525	3,217	308	9.6
Institute of Health (for chests only) ...	... 24,530	22,559	1,971	8.7
	225,851	200,613	25,238	12.6

Radiotherapy is limited in the number and types of cases that can be treated, as only conventional X-ray machines are in use and the useful life of the machines are ending so that break-downs are all too frequent. The department does not possess any megavoltage apparatus. In December, Dr. Ralston Paterson, W.H.O. Consultant Radiotherapist and his wife arrived on a three-month mission to advise on the need for, and the development of a new radiotherapy department.

Chapter Twenty-four

LABORATORY SERVICES

DEPARTMENT OF PATHOLOGY

Steady expansion in the work of the Department of Pathology which has been a feature of each Annual Report continued in 1962.

The work of the Department includes:

(1) necropsies (coroner and hospital cases) at the General, Tan Tock Seng and Kandang Kerbau Hospitals;

(2) histological examinations of biopsy and necropsy specimens from Government hospitals, clinics and general practitioners;

(3) bacteriological investigations from the Government hospitals, clinics, dispensaries and private practitioners. This includes bacteriological investigations relating to public health conducted by City Bacteriological Laboratory which has been merged with the Department since 1960;

(4) serological tests of blood and cerebro-spinal fluids from hospitals, clinics, dispensaries and private practitioners;

(5) the preparations of T.A.B., cholera and autogeneous vaccines for the use of the Government hospitals, clinics, dispensaries and private practitioners;

(6) the carrying out of various clinical laboratory examinations of pregnancy and other miscellaneous examinations;

(7) biochemical investigations for the Government hospitals and private practitioners;

(8) training of all Medical Laboratory technicians in the Ministry of Health. This training is based on that of the Institute of Medical Technology, London. Examinations were carried out in 1962 under a Board of Examiners with the Senior Pahtologist as Chairman (*ex-officio*).

Changes in Departmental Routine.

The Blood Transfusion Unit formerly under the control of the Department was transferred to the D.D.M.S. (Hospitals) in 1962. The volume and scope of laboratory investigations continue to increase especially in the Bacteriology and Biochemistry Sections. In bacteriology more attention was paid to the section in mycology under the guidance of Mrs. B. Stein who has specialised knowledge in this subject. A Departmental Scholarship has been made available for a suitable medical officer to proceed to the United Kingdom to do post-graduate work in bacteriology, and this officer is due to leave in September 1963.

The Biochemistry Section has been strengthened by the appointment of an additional biochemist, Dr. Lee Kum Tatt. However it is regretted that the existing laboratory space for the Biochemistry Section is still totally inadequate and the cramped working condition still continues. Additional space is still an urgent necessity for the proper functioning of the Department.

Work has already started in the additions to the General Hospital Mortuary and when completed will provide better working conditions for the professional staff as well as improved convenience for the general public.

Teaching

The teaching of forensic medicine to medical students was carried out by Dr. B. Gellei.

Table 164

TOTAL NUMBER OF YEARLY INVESTIGATIONS

——	1955	1956	1957	1958	1959	1960	1961	1962
1. Necropsy	2,172	2,336	2,627	2,576	2,509	2,497	2,705	2,696
2. Histology	8,728	9,444	10,120	11,374	12,658	15,162	25,640	23,915
3A. Bacteriology	33,406	44,576	50,107	43,357	45,340	46,951	45,014	122,840
3B. City Bacteriology ..	..	..	..	..	..	74,196	74,860	76,279
4. Serology	74,200	74,196	71,746	72,347	77,776	80,130	78,104	88,978
5. Biochemistry	..	..	..	..	10,312	15,221	20,585	26,458
Total ..	128,932	156,526	164,148	162,038	180,089	234,157	246,908	341,166

The total number of examinations is 341,166 which includes 76,279 examinations done by the City Bacteriological Department.

STAFF

Senior Pathologist ...	... Vacant. Dr. A. O. Aaron, L.M.S. (Singapore) Acting.
Pathologist	... Dr. A. O. Aaron, L.M.S, (Singapore).
Pathologist (Supernumerary)	... Dr. B. Gellei, M.D. Bari (Italy) (On contract).
Bacteriologist (Supernumerary)	... Dr. J. Stein, Ph.D., M.SC. (on contract).
Senior Biochemist ...	... Dr. P. C. Leong, Ph.D., A.R.I.C. (Acting).
Biochemist	... Dr. Lee Kum Tatt, B.SC. (Hons.), Ph.D., M.C.I.C., F.R.I.C.
Senior Registrar ...	... Dr. Tan Kheng Khoo, M.B.B.S. (Adelaide).
Senior Registrar ...	... Dr. K. Sugai, (M.D.) Tokyo (on contract).
Medical Officers ...	... Dr. N. R. Mitra, M.B.B.S. (Calcutta).
	Dr. R. Yung, M.B.B.S. (Adelaide) joined the Dept. on 16-2-62.
	Dr. M. Yu, M.B.B.S. (Malaya) joined the Dept. on 16-1-62.
	Dr. (Miss) S. T. Subrahmanyam, M.B.B.S. (Ceylon) joined the Dept. on 16-6 62.
	Dr. Margaret Chee, M.B.B.S. (Sydney) joined the Dept. on 16-7-62.

City Bacteriological Department

Bacteriologist ...	... Dr. (Mrs.) B. Stein, Ph.D., M.SC.
Asst. Bacteriologist ...	... Dr. K. Karunakaran, M.B.B.S. (Calcutta).

Dr. Tan Kheng Khoo who was awarded a departmental scholarship to United Kingdom returned on 16th April, 1962, having obtained the D.C.P. and Dip. Path., London. He was promoted to Senior Registrar with effect from 11th May, 1962.

Dr. N. R. Mitra was transferred to Surgical "C" on 16th June, 1962.

OTHER STAFF

Executive Officer	1	Laboratory Technicians ...	28
Clerical Officers	2	Typist	1
Stenographer	1	Office Boy	1
Storekeeper	1	Laboratory Attendants ...	30

POST-MORTEM EXAMINATION

Total number of Necropsies = 2,696
(1) Coroner's Cases = 1,189
(2) Hospital Cases = 1,507

These necropsies were conducted by the staff of the Government of Pathology:

Table 165

AGE, SEX, RACE DISTRIBUTION OF AUTOPSIES ON ALL DEATHS (CORONER'S AND WARD CASES) 1962

Age	Chinese		Indians		Malays		Others		Total		Grand Total
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
under 1 year ..	642	440	20	14	1	..	3	..	666	454	1,120
1—10 ..	129	123	8	4	4	..	..	..	141	127	268
11—20 ..	50	45	2	1	5	..	3	..	60	46	106
21—30 ..	82	45	15	2	8	3	9	1	114	51	165
31—40 ..	74	32	33	10	4	2	5	2	116	46	162
41—50 ..	135	56	50	3	5	..	7	..	197	59	256
51—60 ..	201	66	33	..	..	2	6	..	240	68	308
61—70 ..	135	38	18	..	3	..	4	..	160	38	198
Over 71 ..	54	21	9	..	1	..	2	1	66	22	88
Total ..	1,502	866	188	34	34	31	7	39	1,760	911	2,671
Autopsies of Unknown Cases ..											+25
Total ..											2,696

A comparison of certain causes of death established by Post-mortem Examination in 1962 with corresponding figures since 1958.

Table 166

	1958	1959	1960	1961	1962
Tuberculosis	83	55	52	62	58
Cerebral Hæmorrhage and Hypertension	86	27	33	90	75
Coronary Disease	73	94	107	84	116
Cardio-vascular Syphilis	31	14	22	24	8
Malaria	—	1	—	—	3
Beri Beri	21	18	21	8	1
Amoebiasis	3	7	4	10	7
Bacillary Dysentery	6	2	2	1	3
Typhoid	3	1	3	2	1.
Diphtheria	4	6	2	3	4
Lobar Pneumonia	39	28	50	13	19
Malignant Tumours	91	119	106	133	156

An Analysis of the Main Causes of Deaths in Coroner's Cases for 1962 and the preceeding 4 years.

Table 167

Year	1958	1959	1960	1961	1962
Total Necropsies ...	2,576	2,509	2,497	2,705	2,696
Coroner's Cases	1,170	1,229	1,179	1,359	1,189
Injuries from Cutting and Piercing Instruments	29	43	37	45	27
Injuries by Blunt Instruments	15	19	12	13	10
Injuries by Firearms ...	5	7	3	5	7
Hanging	58	80	71	73	55
Drowning	67	81	39	57	76
Caustic Soda Poisoning ...	13	19	11	11	18
Malathion Poisoning ...	—	—	—	4	3
Other Forms of Poisoning ...	21	23	13	18	24
Vehicle Accidents ...	194	191	154	188	172
Other Forms of Violences and Unnatural Deaths ...	159	219	189	233	210
Death from All Forms of Violence and Unnatural Causes	561	682	529	647	602

HISTOLOGY

Total number of sections		23,915
1. *Sections from Biopsies:*		
Total number of cases	10,583	
*Total number of tissues	12,705	
Total number of sections	16,722	

* (Including 368, Cytological examinations).

2. *Sections from Necropsies:*		
Total number of cases	1,057	
Total number of sections	7,193	

AN ANALYSIS OF THE HISTOLOGICAL DIAGNOSIS

1. Inflammatory		2,654
2. Tuberculosis		302
3. Benign tumours		1,374
4. Malignant tumours		1,852
(*a*) Nasopharynx	160	
(*b*) Cervix	199	
(*c*) Oesophagus	82	
(*d*) Colon and rectum	68	
(*e*) Skin	106	
(*f*) Breast	105	
(*g*) Stomach	92	
(*h*) Others	1,040	
Total ...	1,852	
5. Others		6,523
Total ...		12,705

ANALYSIS OF TISSUES EXAMINED

1.	Anal and ischio-rectal tissues	210
2.	Animal tissues	19
3.	Appendix	1,048
4.	Ascitic fluid	59
5.	Adrenals	2
6.	Ampulla of vater	3
7.	Bladder	81
8.	Blood vessels	15
9.	Bones	154
10.	Bone marrow	9
11.	Brain and Meninges	38
12.	Breast	260
13.	Bronchus	89
14.	Bronchial smears	67
15.	Blood film (sex determination)	2
16.	Broad ligament cyst and Parametrial tissues	2
17.	Cervix	1,216
18.	Colon and rectum	106
19.	Conjunctiva and cornea	9
20.	Ear	53
21.	Endometrium	3,019
22.	Eye and eyelids, etc.	68
23.	Fallopian tube	300
24.	Gall bladder and common bile duct	144
25.	Heart muscle and pericardial fluid	10
26.	Hydrocele fluid	4
27.	Intestines	68
28.	Joints and synovial tissues	74
29.	Kidney	79
30.	Larynx	134
31.	Liver	252
32.	Lung	88
33.	Lymph gland	764
34.	Mastoid antrum	10
35.	Mesentery	6
36.	Muscles	40
37.	Mouth and Dental diseases	35
38.	Mediastinum	5
39.	Nerves and sympathetic ganglia	43
40.	Nose and Nasopharynx and sinuses	374
41.	Oesophagus	132
42.	Omentum	42
43.	Ovary	442
44.	Oral smears	1
45.	Palate	22
46.	Pancreas	22
47.	Parathyroid	6
48.	Penis	38
49.	Peritoneum and peritoneal fluid	40
50.	Pharynx	12
51.	Placenta	44
52.	Pleura	100
53.	Pleural fluid	183

ANALYSIS OF TISSUES EXAMINED—*continued*

54.	Prostate	100
55.	Pus	1
56.	Retroperitoneal tissues	18
57.	Salivary gland	50
58.	Scrotum	15
59.	Skin and subcutaneous tissues	1,178
60.	Spleen	62
61.	Sputum	21
62.	Stomach and duodenum	352
63.	Spinal cord and cerebrospinal fluid	28
64.	Spermatic cord	5
65.	Testis	31
66.	Thyroid gland	228
67.	Tongue	48
68.	Tonsils	33
69.	Trachea	11
70.	Thymus and thoracic tissues	4
71.	Urethra	28
72.	Ureter	13
73.	Urine	9
74.	Uterus	320
75.	Umbilicus and cord	10
76.	Vagina	65
77.	Vulva	32
	Total number of tissues examined	12,705

BACTERIOLOGY SECTION

THE Bacteriology Section occupies the whole of ground floor of the Department of Pathology. It consists of three routine laboratories, two research laboratories-cum-office for bacteriologist and assistant bacteriologist, one media room, one sterilisation room, one glass preparation room, one washing room and two animal inoculation room.

STAFF

Bacteriologist	1
Assistant Bacteriologist	2
Senior Laboratory Technician	1
Qualified Laboratory Technician	7
Technician-in-training (average)	6 (No. is variable)
Laboratory Attendant	12

The average number of examination per year carried out by trained technicians (including doctors and technicians-in-training) is 7,430 specimens per person.

Total number of routine investigations	117,623
Total number of investigations upon special request and examination involved in applied research (See Appendix — *C*)	5,217
Grand Total	122,840

1. *Throat Swabs for culture*		6,031
Organisms isolated	953	
Beta haemolytic streptococcus	256	
C. diptheriae	124	
Staphylococcus Aureus (Coagulase +ve)	477	
Other organisms	96	
2. *Nasal Swabs for Culture*		624
Organisms isolated	139	
Beta haemolytic streptococcus	11	
C. diptheriae	10	
Staphylococcus aureus (Coagulase +ve)	106	
Other organisms	12	
3. *Sputum for Culture*		3,144
Organisms isolated	475	
Beta haemolytic streptococcus	137	
Staphylococcus aureus (Coagulase +ve)	120	
B. friedlander	13	
Candida sp.	79	
B. coli	35	
Ps. pyocyanea	67	
B. proteus	13	
Strept. pneumococcus	9	
Paracolon	1	
4. *Ear Swabs and Pus for Culture*		4,036
Organisms isolated	2,964	
Beta haemolytic streptococcus	314	
Alpha streptococcus	49	
Non haemolytic streptococcus	12	
Staphylococcus aureus (coagulase +ve)	1,296	
Strept. pneumococcus	5	
Ps. pyocyanea	401	
B. proteus	367	
Enterococcus	51	
B. Coli	362	
B. Coli aerogenes	86	
Actinomyces sp.	2	
Paracolon	8	
Salmonella para typhi C	1	
Candida sp.	10	
5. Pleural Fluid for Culture		702
Organisms isolated	81	
Beta haemolytic streptococcus	5	
Streptococcus faecalis	4	
Staphylococcus aureus (Coagulase +ve)	42	
Streptococcus pneumococcus	4	
Ps. pyocyanae	4	
B. proteus	5	
B. coli	16	
Salmonella group (unidentified)	1	

6. Cerebral Spinal Fluid for Culture		1,142
Organisms isolated	58	
Cryptococcus neoformans	7	
Beta haemolytic streptococcus	4	
Alpha haemolytic streptococcus	3	
Non-haemolytic streptococcus	1	
H. influenzae	3	
Meningococcus	2	
Stept. pneumococcus	12	
Staphylococcus aureus (coagulase +ve)	15	
B. Coli	4	
Ps. pyocyanae	4	
Salmonella group D	2	
Salmonella paratyphi C	1	
7. Vaginal, Cervical and Urethral Swabs		2,356
Organisms isolated	924	
Beta haemolytic streptococcus	190	
Alpha haemolytic streptococcus	54	
Non haemolytic streptococcus	10	
Staphylococcus aureus (coagulase +ve)	211	
N. gonorrhoeae	5	
Clwelchii	7	
Enterococcus	85	
B. proteus	60	
Ps. pyocyanae	36	
B. coli	230	
Candida sp.	25	
Salmonella typhi	1	
Paracolon	10	
8. Eye Swabs		293
Organisms isolated	61	
H. influenzae	1	
Beta haemolytic Streptococcus	5	
Streptococcus pneumonia	1	
Staphylococcus aureus (Coagulase +ve)	31	
B. proteus	3	
Ps. pyocyanea	11	
B. coli aerogenes	5	
B. coli	4	
9. Urine for Culture		4,414
Organisms isolated	2,472	
Beta haemolytic streptococcus	30	
Alpha haemolytic streptococcus	44	
Non haemolytic streptococcus	114	
B. coli	831	
B. coli aerogenes	606	
Enterococcus	101	
Staphylococcus aureus (Coagulase +ve)	82	
Ps. pyocyanae	212	
B. proteus	444	
Candida sp.	5	
Salmonella typhi	2	
Trichomonas Vaginalis	1	

10. Stool and Rectal Swabs for Culture		3,924
Organisms isolated	347	
Pathogenic B. coli	271	
Shigella flexneri	30	
Shigella sonnei	13	
Shigella boyd	1	
Shigella (Unidentified)	2	
Salmonella typhi	6	
Salmonella paratyphi B	4	
Salmonella group E	3	
Salmonella group (unidentified)	17	
11. Blood (including blood clot) for Culture		3,798
Organisms isolated	257	
Salmonella typhi	61	
Staphlococcus aureus (coagulase +ve)	96	
Beta haemolytic streptococcus	7	
Alpha haemolytic streptococcus	26	
Ps. pyocyanae	19	
Other organisms	48	
12. Serological Examination		4,914
Blood for widal	1,525	
Blood for weifelix	1,525	
Blood for Paul Brunnell	77	
Blood for Brucella agglutination	58	
Blood for Vi agglutination	25	
Sensitised erythrocytes lysis (SEL)	357	
C-reaction Protein test	374	
Anti-streptolysin "O" titre	292	
Anti-thyroid anti-bodies (Haemagglutination)	275	
Haemagglutination for Torula anti-bodies	75	
Haemagglutination for Trichophyton anti-bodies	26	
Haemagglutination for Drug Sensitivity	7	
Agar-gel Diffusion test for tyroid anti-bodies	135	
Agar-gel Diffusion test for Diphtheriae (virulence)	158	
Agar-gel Diffusion test for Drug sensitivity	5	
13. Culture for Amoeba		1,245

Specimen	Total	Positive M.E.		Positive Culture	
		Troph. cysts	or E.H.	E. Coli	E. nana
Stool	1,120	44	93	1	5
Rectal Swab	30	2	1	—	—
Pus from liver and other sources	73	1	1	—	—
P.M. specimens	14	2	2	—	—
Micellaneous	8	2	2	—	—

Trichomonas intestinalis grown from stool culture	23
Giardia lamblia seen in M.E.	21

14. Mycological Investigation		3,511
(*a*) Culture for fungi (See Appendix A)	632	
(*b*) Sensitivity tests for fungi	2,765	
(*c*) Biochemical variation of Candida albicans (See table Appendix B)	114	
15. Animal Inoculation		216
(*a*) Tuberculosis	16	
Endometrium	5	
C.S.F.	4	
Pleural fluid	2	
Miscellaneous	5	
(*b*) Leptospirosis	9	
Blood	8	
Urine	1	
(*c*) Exprimental Inoculation	81	

Specimens	G. pigs	Rabbits	Mice	Rats
Histoplasma	2	—	20	10
Cryptococcus	—	1	19	10
Cl. tetanus	—	—	8	—
B. friedlander	—	—	3	—
B. botulinum	4	—	—	—
Cl. septicum	2	—	—	—
Streptococcus	1	—	20	—
Whitmori	1	—	—	—

(*d*) Virulence tests of C. diphtheria	110	
16. Standardisation of Drugs and Sterility tests of Biological preparation, etc.		1,254
(*a*) Sterility Tests	1,089	
Biological preparatton	944	
Surgical dressings	6	
Blood (from BTS)	86	
Bones (from bone bank)	53	
(*b*) Potency tests of anti-biotic preparations	5	
(*c*) Bacterial count of air in B Theatre	160	
17. Toad Test (for pregnancy)		360
Positive	159	
Negative	201	
18. Sensitivity tests		75,558

- Penicillin
- Streptomycin
- Chloramphenicol
- Tetracycline Hyd.
- Oxytetracycline
- Trisulphonamide N.F.
- Neomycin
- Spiramycin
- Kanamycin
- Sigmamycin
- Erythromycin
- DMC — Tetracycline (Ledermycin)
- Polymyxin
- Oleandomycin
- Bacttracin
- Albamycin
- Celbinin
- Penbritin

19.	Clinical Examination		20
	Blood Count	4	
	Stool	1	
	Dark ground	14	
	Seminal Appraisal	1	
20.	Preparation of Vaccine		
	Autogenous Vaccine	160cc	
	T.A.B. (Prophylatic vaccine)	4,850cc	
	Trichophytin for skin tests	100cc	
21.	Preparation of Agglutinable Suspension		
	Salmonella typhi 'H' (concentrated)	500cc	
	Salmonella typhi 'O' (concentrated)	500cc	
	Salmonella paratyphi 'AH' (concentrated)	500cc	
	Salmonella paratyphi 'AO' (concentrated)	500cc	
	Salmonella paratyphi 'BH' (concentrated)	500cc	
	Salmonella paratyphi 'BO' (concentrated)	500cc	
	Salmonella paratyphi 'CH' (concentrated)	500cc	
	Salmonella paratyphi 'CO' (concentrated)	500cc	
	B. proteus OXK (concentrated)	500cc	
	B. proteus OX19 (concentrated)	500cc	
22.	Media Preparation		
	Agar media	3,000,000cc	
	Broth media	1,250,000cc	
	Meat broth	40,000cc	
	Serum broth	50,000cc	
	Sugar Media (Lactose, Succharose, Maltose, Mannite, Dulcite, Xylose, Inulin, Dextrine and starch	70,000cc	
	Physiological Saline	600,000cc	
23.	Preparation of anti-biotic Discs		
	(Penicillin, Streptomycin, Oxytetracycline, Neomycin, Chloramphenicol, Tetracycline Hyd. Spiramycin, Ledermycin, Polymixin, Kanamycin Sigmamycin, Erythromycin, DMC-tetracycline, and Bactericin, etc.)	300,000 discs	
24.	Maintainence of stock Culture		439
	Fungi (dermatophytes, candida, etc.).	114	
	Staphylococcus (phage typed)	244	
	C. diphtheriae	30	
	Leptpspira	12	
	Salmonella	25	
	V. cholera	4	
	Brucella	3	
	Pathogenic B. coli	2	
	E. histolytica	2	
	Balantidium coli	3	

As a result of a request from the Senior Surgeon, General Hospital, Singapore, a study was undertaken to ascertain the efficiency of an ultraviolet bacteria sterilizing machine "Ban-Bac". The work involved in the isolation, identification and virulence testing (of staphylococci) was about 160 bacteriological tests and 20 animal inoculations. The preliminary results led to the conclusion that an ordinary mechanically filtering and ultraviolet sterlizing machine has little if any effect on the reduction of bacterial contamination of air. On the other hand silent work, less traffic and mopping of the floor yielded much better results reducing the bacterial count sometimes up to 90 per cent. It was further found that potential pathogens like beta haemolytic staphylococci and Ps. pyocyaneus are frequently found among the contaminants and a considerable proportion of them proved to be resistant to the ordinary antibiotics. Two among ten staphylococcus strains examined were fatal in mice.

With the help and supervision of the present City Bacteriologist the hæmagglutination test of sensitized tanned sheep cells was developed and introduced recently into routine for the detection of anti-thyroid auto-immune antibodies. 275 specimens of blood were already examined from Hashimoto's suspected and other thyroid disorders. A considerable proportion showed titres of several hundred thousands and a few of several millions. Four sera produced very marked precipitation lines in agar-gel-diffusion plates. The significance of these findings are being now eveluated with the collaboration of the clinicians.

Following complaints from the surgical wards a number of investigations were carried out to check the potency of disinfectants and the process of steam sterilisation. Some disinfecting solutions were found ineffective and by using cultures of spore bearing organisms, certain places in the autoclaves did not attain the required temperature levels for proper sterilization.

Lectures were given to technicians-in-training, to senior nurses and to University students by bacteriologists. Regular seminars were given by members of the staff every two weeks throughout the year to promote modern knowledge and to raise the standard of work. They were attended by the whole staff including the City Council Laboratory and visitors from other departments.

The Laboratory staff worked in good harmony and all have done their utmost to improve efficiency and standard of work. The bi-weekly seminars created an atmosphere for mutual discussion, consultations and help. Many projects are in progress for the near future, of which the mycological, virological, standardisation of biological products and training school for technicians are at the present in this centre.

The increase of the number of bacteriological investigation in this report is greatly due to the increased figure of the Anti-biotic Sensitivity tests which have been previously counted as one investigation for each specimen, but six separate investigations are actually carried out; and the increased number of new tests introduced into the routine, such as Hæmagglutination test for anti-thyroid anti-bodies, Anti-streptolysin 'O' titre, C- reaction protein test, etc.

Immunologocal studies on Rhizobium strains isolated from Cover Crops of Rubber Trees in the Federation of Malaya.

No. of strains investigated	29
No. of rabbits used for preparation of immune sera	22
No. of immune sera prepared	36
Various absorption tests performed	35
Mono-specific sera prepared	8
Agglutination tests performed	4,490
Rhizobium antigen prepared	1,500 cc
Special media prepared	18,000 cc
Rhizobium antigen extracts prepared	100 (12 types)
Immunochemical tests in Agar-gel diffusion	112
Biochemical tests	245
Sensitivity tests to anti-biotics	240

The Rubber Research Institute of Malaya approached the Ministry of Health, Singapore, and obtained permission for the bacteriologist to investigate this study. This was carried out in the Department of Pathology at the beginning without assistance. Later, when the first encouraging results were obtained the senior technician of the Pathological Division, R.R.I came three times, three weeks each time, for training in Singapore. The bacteriologist was invited a number of times to Kuala Lumpur to report on the progress of work. All the incidental expenses were covered by the R.R.I. This research was extended over a period of the whole year and the following important results were obtained:

(*a*) All the Rhizobium strains proved to be good antigens, and produced in rabbits titres up to 10,000.

(*b*) By cross agglutination tests many strains appeared different and could be classified into a number of serological groups.

(*c*) By cross absorption technique mono-specific sera could be obtained and reacted specifically with the homologous strains and in a suitable dilution, this test was very practical, using the slide-agglutination technique.

(*d*) As a result of this study it was found that all the strains kept for years in stock underwent mutation and all but one lost the ability to produce nodules. New strains were therefore freshly isolated from cover crops.

(*e*) The Rhizobium-like strains (mutants and variants) of the stock behaved culturally, biochemically and serologically different from the new ones.

(*f*) The sensitivity test proved also to be useful for classification provided a suitable medium is available.

(*g*) Purified mono-specific sera are giving specific reaction with the flourescencent antidody technique. Thus, strains could be directly identified in material from squeezed nodules obtained straight from the field. Now, it is possible to trace a certain strain and tell if it gets established in the field or replaced by a wild one. This object was put in the beginning of the study and was actually achieved.

RETURN OF WORK

The following is the report on the work done in the Bacteriological Laboratory, City Hall, Singapore, during the year 1962.

Public Health Specimens:

		1961	1962
1.	Asst. Health Officer	8,390	7,181
2.	M.O. i/c Staff		2,769
3.	M.O. i/c O.D. Dispensaries	333	1,005
4.	City Cleansing Department	30	35
5.	City Sewerage Department	33	17
6.	Maternity and Infant Welfare Clinics and Creches	6,128	8,557
7.	Middleton Hospital	26,968	25,828
8.	Johore and Tebrau Water Works	194	288
9.	Private Practitioners	2,445	2,061
10.	Others, includes Cold Storage, Other Manufacturers, etc.	60	94
11.	(*a*) Sensitivity tests	—	46
	(*b*) Virulence tests	590	84
	(*c*) Amoebae culture	—	51
	(*d*) Biochemical test for diphtheria, etc.	—	4,727
	(*e*) Grouping	6,500	—
	(*f*) Confirmative Coli test	50	—
12.	Rats from Plague Prevention Dept.	3,213	3,577
13.	Ecto-parasites from Plague Prevention Dept.	2,637	2,372
		57,571	58,692

Water Samples:

		1961	1962
14.	City Water Engineer	11,636	12,464
15.	City Council Swimming Pools	4,617	4,639
16.	Miscellaneous Sources	426	368
17.	Algae and Other specimens	110	116
18.	Coli confirmative tests	500	—
	Total	74,860	76,279

Malaria.—226 blood films were examined for malarial parasites.

P. Vivax	1
Negative	225
Total	226

Tuberculosis.—497 specimens were examined. The number examined last year (1961) was 1,674. This drop was due to the stopping of the examination of sputum from candidates for new appointments.

		Positive	Negative	Total
1.	Sputum	3	480	483
2.	Urine	—	1	1
3.	Pathological Exudates	—	1	1
4.	Milk	—	12	12
	Total	3	494	497

SALMONELLOSIS (*Widal Reaction*)

	Positive	Negative	Total
Agglutination with Sal. typhi	94	636	730
Agglutination with Sal. para A.	—	269	269
Agglutination with Sal. para B.	7	262	269
Agglutination with Sal. para C.	5	264	269
Blood clot culture (S. typhi isolated) ...	40	230	270
Agglutination with Vi antigen	—	—	730
TYPHUS (*Weil Felix Reaction*)			
Agglutination with B. pıoteus OXK ...	—	262	262
Agglutination with B. proteus OX19 ...	—	262	262
Total ...	146	2,185	3,061

Faeces culture — S. typhi isolated ...	105	3,931	4,036
Urine culture — S. typhi isolated ...	12	1,388	1,400
Total ...	117	5,319	5,436

460 cases were examined for typhoid carrier-state and from each case three specimens were examined — blood, faeces and urine.

Amoebic Dysentery.—3,260 specimens of faeces were examined for amoebae.

E. Histolytica were present in ...	10
Negative	3,250
Total ...	3,260

Cultures were done on 51 specimens.

Shigelosis (*Bacillary Dysentery*).—4,159 specimens of faeces were cultured.

Sh. flexner were isolated in ...	168
Sh. sonnei were isolated in ...	89
Sh. Schmitz were isolated in ...	1
Negative	3,901
Total ...	4,159

Faeces for Ova and Intestinal Parasites.—9,488 specimens of faeces were examined. 6,074 specimens were negative and in 3,394 specimens ova present.

There were often two or three types and even four types of ova in a single specimen. Types of intestinal parasites found in the specimens of faeces were as follows:

Ankylostome	859
Ascaris	1,678
Trichuris	2,029
Oxyuris	27
Strongyloides	3
Lamblia cysts	31
Trichomonas	2
Tapeworm ova (H. Nana) ...	1

Diphtheria.—18,522 specimens (as compared to 12,618 specimens in 1961) were examined for C. diphtheriae.

Table 168

—	Throat Swabs		Nasal Swabs		Ear Swabs		(Others–Sore, Eye, etc.		Total	
	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.
1961 ..	10,420	1,353	583	97	119	16	25	5	11,147	1,471
	11,773		680		135		30		12,618	
1962 ..	13,092	1,075	2,449	797	755	175	145	34	16,441	2,081
	14,167		3,246		930		179		18,522	

Biochemical tests were done on 4,543 cultures especially from the nasal and ear swabs.

Virulence tests were done on 84 strains.

Leprosy.—One specimen was examined and found to be negative.

Miscellaneous Examinations:

1.	Urine/Pus for Gonococci (21 positives)	352
2.	Faeces for Occult blood	3
3.	Blood for Total Red Cell Count	22
4.	Blood for Total White Cell Count	331
5.	Blood for Differential Count	318
6.	Blood for Haemoglobin estimation	8
7.	Blood for E.S.R.	2
8.	Pathological exudates for General Examination	22
9.	Urine for General Examination	2,427
10.	Ice Cream, Popsicles, etc.	464
11.	Soya Bean Drinks	1
12.	Milk and milk products	48
13.	Bottles for sterility tests	12
14.	Orange Drinks	1
15.	Faeces for Food poisoning groups	25
16.	Sundried humus and sludge	16
17.	Sewage Effluent	2
18.	Wash water from nightsoil	35
19.	Faeces for Pathogenic E. Coli	22
20.	Cooked Food	12
21.	Canned Food/juice	5
22.	Whippings (Cream) in tin	3
23.	Evaporated milk	1
24.	Contents from Chemical closets of aircrafts	122

Sensitivity tests to antibiotics were done on 46 various cultures. From two tins of cooked Holland pork, and three tins of whipping cream clostridium organisms were isolated.

Two specimens of cooked food showed the presence of gram positive anaerobic bacilli. These were from a local restaurant.

Guinea pig inoculations showed that the strains were not toxic.

Plague.—3,577 rats were dissected. None showed signs of plague infection. 2,372 ecto-parasites were combed from rats and examined.

The species and distribution of the rats and ecto-parasites are given in table 171.

Candidas.—Swabs received for culture for corynebacterium diphtheriae frequently showed the presence of monilias. With the view of identifying these organisms and finding out their sensitivity to the antimycotic agents an investigation of cultures containing heavy growth of monilias was carried out. The results of the first 150 are received here. These came from 93 diphtheria contacts and 57 patients from clinics, dispensaries and Middleton Hospital. One child who had C. diphtheriae in the throat and nose had monilias also in the throat, nose and ear. In a case like this the treatment is important because when the normal flora and the diphtheria organisms would be removed by the common antibiotics in use, monilias are likely to spread very rapidly. The classification of the candidas is shown in table 169.

Table 169

Site	C. Albicans	C. Tropicalis	C. Kruzei	C. Parakruzei	C. Stellatoides	Others	Total
Throat ..	87	30	2	2	2	19	141
Nose ..	1	2	..	1	..	..	4
Ear ..	3	..	..	..	..	1	4
Lip ..	1	..	..	..	..	..	1
Total ..	92	32	2	3	2	20	150

The sensivity of the two common types of candidas on Sabourud plates is as follows. (Holes of 8 m.m. diameter were made and two drops of antimycotic solution dropped into it).

Table 170

	Mycostatin 5%			Iodine 3%			Gentian Violet 5%			Brilliant Green 1%			Dequalinum 5%		
	*	†	‡	*	†	‡	*	†	‡	*	†	‡	*	†	‡
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
C. albicans ..	4.5	38.2	57.3	7.8	22.5	69.7	32.6	60.6	7.8	1.1	10.3	88.6	91.8	9.2	..
C. tropicalis ..	..	64.5	35.5	..	9.7	90.3	29.0	67.7	3.3	..	3.6	96.4	85.2	14.8	..

* No inhibition of growth or poor inhibition (under 15 m.m. diameter).

† Moderate innibition of growth (i e. 15 —20 m.m. diameter).

‡ Marked inhibition of growth (i.e. more than 20 m.m. diameter).

WATER SAMPLES

Source	Annual Average total colonies per ml. at 37°C in 24 hours	Annual Average presumptive coliform counts per 100 ml. at 37°C. in 24 hours
1. MacRitchie Res. Valve Tower	195	56
2. Peirce Res. Valve Tower	105	24
3. Seletar Res. Suction Well	128	23
4. Pontian Res. Valve Tower	188	60
5. Pontian Camp Supply	14	Less than 1
6. Tebrau Res. Clear Water Tank	7	Less than 1
7. Gunong Pulai Res. Clear Water Tank	8	Less than 1
8. Woodleigh Res. Clear Water Tank	6	0
9. Bukit Timah Res. Clear Water Tank	11	Less than 1
10. Bedok Res. Clear Water Tank	37	Less than 1
11. Pearl's Hill Res. Tank No. 1	5	Less than 1
12. Pearl's Hill Res. Tank No. 2	5	0
13. Fort Canning Service Res.	5	0
14. Taps — Bacteriological Lab.	6	0
Lorong Lalat Office	11	Less than 1
Havelock Road Office	6	0
Pasir Panjang Office	5	0
Dunearn Road Office	6	0
Joo Chiat Office	6	0
AVERAGE OF SIX (6) TAPS	7	Less than 1
PUBLIC SWIMMING POOLS (CITY COUNCIL):		
Mount Emily — Inlet End	5	0
Oulet End	5	Less than 1
Yan Kit — Shallow Pool	5	0
Practice Pool	6	0
Main Pool (Inlet)	5	0
Main Pool (Outlet)	7	0
Farrer Park — Shallow Pool (Inlet)	5	0
Shallow Pool (Outlet)	7	Less than 1
Main Pool (Inlet)	6	Less than 1
Main Pool (Outlet)	9	Less than 1
River Valley — Shallow Pool (Inlet)	6	Less than 1
Shallow Pool (Outlet)	5	Less than 1
Main Pool (Inlet)	6	Less than 1
Main Pool (Outlet)	6	Less than 1

MISCELLANEOUS SAMPLES:

Singapore Swimming Club	193 samples
Tanglin Club	64
Chinese Swimming Club	49
Connell House	26
Royal Island Club	12
Goodwood Park Hotel	1
Others	23
Total	368 samples

Algae.—116 samples of water were examined for algae. Tap water remained satisfactory throughout the year 1962.

Table 171

PLAGUE PREVENTION

The following is a return of Rats caught for the Year 1962

Source	R Norvegicus		R Rattus		R Concolor		M Musculus		Croci dura	Total Rats	Total Preg. Rats	Total Dead Rats	Fleas X. Cheopies	Fleas Others Ct. Felis	Total Fleas	Mite	T. Lewisi		Average Fleas per rat	Remarks
	M.	F.	M.	F.	M.	F.	M.	F.									+ve	−ve		
City Health ..	802	1,233	6	5	61	270	100	22	138	2,637	221	50	1,932	1	1,933	42	..	..	0.73	..
Govt. Health ..	2	37	12	35	14	24	63	80	6	273	10	61	177	..	177	77	..	..	0.65	..
S.H.B. ..	16	53	46	119	21	21	2	2	..	280	7	..	106	..	106	37	..	..	0.38	..
Ships ..	..	..	50	110	22	22	77	106	..	387	23	387	..	..	..	..	..	..	..	Fumigated HCN.
Total ..	820	1,323	114	269	118	337	242	210	144	3,577	261	498	2,215	1	2,216	156	..	..	..	
Grand Total ..	2,143		383		455		452		144	3,577	261	498	2,215	1	2,216	156	..		..	
Pregnant Rats ..	..	219	..	17	..	9	..	16	..	..	261	..	..	..	..	..	..	..	..	

All the Rats were dissected and none were found infected with Plague.
One hundred and three live rats were sent to the Department of Parasitology, University of Singapore.
Five live rats infected with T. Lewisi were sent to the Department of Parasitology, University of Singapore.
Eighteen live rats were sent to the Department of Zoology, University of Singapore.
Two live rats infected with T. Lewisi were sent to the Department of Zoology, University of Singapore.
Two live rats were sent to D.A.D.A.H. Hq. Singapore Base District, Singapore.
All these rats are not included in the above totals,

STAFF

Dr. (Mrs.) Bella Stein, the City Bacteriologist, organised the starting of a Mycology section in the Department of Pathology, General Hospital and continued to supervise its working.

Dr. K. Karunakaran, the Assistant City Bacteriologist acted as Medical Superintendent, Middleton Hospital, till 5th March, 1962.

Mr. Yeo Eng Kee acted in the post of Laboratory Officer (Bacteriology) which remained unfilled since July 1961.

Che Mohd. b. Dahlan of the City Electricity Department reported for duty on 1st November, 1962 to work as a Laboratory Attendant.

Government laboratory technicians-in-training were posted here for periods of 2 — 4 weeks to learn Public Health Bacteriology.

The staffing of the laboratory remained unsatisfactory. Even so, an effort was made to carry out some essential medical surveys (such as the nature of monilias in throat swabs of patients and diphtheria contacts, evaluation of bacteriological findings in various waters, etc.) some of which are not yet complete due to shortage of manpower.

MYCOLOGY SECTION

STRAINS OF FUNGI ISOLATED

Number of Specimens	*Skin Scrapings*	*Sputum*	*Nails*	*Pus*	*Other Sources*	*Total*
	320	127	34	48	103	632
Trichophton rubrum	12	—	1	—	—	13
Trichophton gypseum	9	—	—	—	—	9
Trichophton tonsurans	19	—	2	—	2 hair	24
Trichophton schoenleini	1	—	—	—	—	1
Trichophton violaceum	2	—	—	—	—	2
Tricrosporum gypseum	1	—	1	—	—	2
Trichophton violaceum	2	—	—	—	—	2
Microsporum canis	1	—	—	—	—	1
Epiderm. flocossum	4	—	—	—	—	4
Tinea versicolor	7	—	—	—	—	7
Cladosporium sp.	2	—	—	—	—	2
Fiedraia hortai	—	—	—	—	1 hair	1
Cryptococcus neoformans	—	—	—	—	7 CSF	7
Actinomyces israeli	—	—	—	—	3 teeth	3
Candida albicans	15	39	3	3	4	64
Candida tropicalis	7	17	1	9	6	40
Candida stellatoidea	4	9	—	1	2	16
Candida krusei	13	2	1	2	—	18
Candida parakrusei	11	3	2	4	5	25
Candida sp.	22	11	3	4	5	45
Black yeast	6	—	—	—	—	6
Apsergillus niger	4	4	2	—	2	12
Aspergillus fumigatus	2	1	—	1	2 tissues	6
Streptomyces sp.	2	—	—	—	—	2
Oospora	2	—	—	—	—	2
Fusarium	—	—	2	—	—	2
Saccharomyces	3	1	—	—	—	4
Penicillium sp.	—	2	—	—	—	2
Histoplasma capsulatum	—	—	—	—	1 P.M.	1

MYCOLOGY SECTION

SENSITIVITY OF FUNGUS TO ANILINE DYES, IODINE AND ANTIBIOTIC

Strains	*No. Tested*	*M* ++	*I* ++	*BG* ++	*GV* ++	*Deq* +	*Gris* +	
Candida albicians	168	102	110	105	17	—	—	
Candida tropicalis	72	36	49	72	4	—	—	
Candida krusei	15	5	5	11	—	—	—	
Candida parakrusei	30	13	19	26	3	—	—	
Candida stellatoidea	21	11	14	12	—	—	—	
Candida sp.	34	11	26	25	—	—	—	
Cryptococcus neofornians	6	6+	4	3	3	1	—	Gab+(3) Amp+(3)
Trichophton gypseum	9	9	8	8	4	3	1	
Trichophton rubrum	13	8	9	12	5	—	1	
Trichophton tonsurans	13	13	13	13	12	8	1	
Microsporum gypseum	2	2	2	2	+2	1	1	
Epiderm. flocossum	5	5	5	5	++3	3	1	
Cladosporium	2	2	2	2	+1	1	—	

M—5% mycostatin in alcohol.
I—2.5% Tincture of Iodine.
BG—2% Brilliant green in alcohol.
GV—5% Gentian Violet in water.
Deq—Dequadin chloride.
Gris—Griseofulvin.
Gab—Gabbromicina.
Amp—Amphothericin B.

BIOCHEMICAL VARIATION OF CANDIDA albicians (114 strains)

Glucose	*Maltose*	*Sacchrose*	*Lactose*	*Chlamydospore*	
AG	AG	A	—	+	56%
AG	AG	AG	—	+	4%
AG	AG	—	—	+	40%

SEROLOGY

Total number of tests performed	88,978

BLOOD

V.D.R.L. (Qualitative)	63,965
Kahn Test (Qualitative)	14,612
Kahn Test (Quantitative)	142
Wassermann Reaction	4,465
Gonococcus Complement Fixation Test	1,069
Filarial Complement Fixation Test	680
Rheumatoid Factor (Rose Waaler Test)	134
Total	85,067

CEREBROSPINAL FLUID (C.S.F.)

V.D.R.L. (Qualitative)	1,835
Kahn Test (Qualitative)	1,722
Wassermann Test (Reaction)	14
Lange's Colloidal Gold Curve	340
Total	3,911

Grand Total of Tests performed on Blood and C.S.F.	88,978

Total number of tests performed on Blood and C.S.F.		88.978
Blood	85,067	
Cerebrospinal fluid	3,911	

BLOOD

Total number of V.D.R.L.		63,965
Number of Positive	1,282	
Number of Doubtful	2,921	
Number of Negative	59,762	
Total number of Kahn Tests (Qualitative)		14,612
Number of Positive	1,228	
Number of Doubtful	2,338	
Number of Negative	11,046	
Total number of Kahn Tests (Quantitative)		142
Total number of Wassermann Tests		4,465
Number of Positive	1,077	
Number of Doubtful	886	
Number of Negative	2,483	
Anti-complementary	19	
Total number of Gonococcus Complement Fixation Tests		1,069
Number of Positive	205	
Number of Doubtful	236	
Number of Negative	593	
Anti-complementary	35	
Total number of Filarial Complement Fixation Test		680
Total number of Rose — Waaler Tests for Rheumatoid Factor		134
Total		85,067

CEREBROSPINAL FLUID (C.S.F.)

Total number of V.D.R.L. Tests		1,835
Number of Positive	134	
Number of Doubtful	12	
Number of Negative	1,689	
Total number of Kahn Tests		1,722
Number of Positive	115	
Number of Doubtful	17	
Number of Negative	1,590	
Total number of Wassermann Tests		14
Number of Positive	3	
Number of Doubtful	4	
Number of Negative	6	
Anti-complementary	1	
Total number of Lange's Colloidal Gold Curve		340
Total		3,911

BIOCHEMISTRY SECTION

An additional post of biochemist was filled during the year with the appointment of Dr. Lee Kum Tatt, B.SC. (Honours), PH.D., F.R.I.C.

The following items of special equipment have been acquired recently:—

Cambridge pH Meter, EEL Fluorimeter, Unicam Spectrophotometer SP600, Speaker Absorptiometer.

The number of analyses carried out during 1962 totalled 26,458 as compared with 20,585 in the previous year, representing an increase of 28 per cent.

The following is a return of the main routine analyses carried out during the year:

		No. of Specimens
Blood:	potassium	6,765
	sodium	6,729
	chlorides	6,557
	transaminases	1,081
	iron	760
	calcium	635
	cholesterol	465
	inorganic phosphorus	389
	total iron-binding capacity	345
	abnormal blood pigments	231
	p-aminosalicylic acid	224
	pyruvic acid	216
	creatinine	117
	phosphatases	115
	glucose tolerance tests	98
	chlorpropamide response tests	86
Urine:	creatinine	233
	17-ketosteroids	203
	17-hydroxycorticosteroids	129
	inorganic phosphorus	86
	sodium	81
	potassium	79
	chlorides	77
	calcium	75
	blood pigments	48
	amino acids	36
	catecholamines	35

The following types of biochemical analyses were also carried out on a smaller scale:

Blood: alkali reserve, uric acid, urea, caeruloplasmin, electrophoresis of serum proteins, bilirubin, amino acids, non-protein nitrogen, creatine, total lipids, copper, congo red test, aldolase, lipase, beta-carotene, sulphonamides, salicylate.

Urine: Bence-Jones protein, uric acid, ammonia, paper chromatography of amino acids and sugars, electrophoresis of urinary proteins, coproporphyrin, uroporphyrin, porphobilinogen, urobilinogen, ascorbic acid, phenol red test, 5-hydroxy-indole-acetic acid, pH, sulphonamides, chondroitin sulphate, 3-methoxy-4-hydroxy-mandelic acid.

Faeces: fat-balance tests, trypsin, calcium.

Miscellaneous: electrolytes in sweat and C.S.F., gastric contents, urinary and biliary calculi, digestive enzymes in duodenal fluid, dithiazanine in toxicological specimens.

Chapter Twenty-five

BLOOD TRANSFUSION SERVICE

The department provides a central blood transfusion service for all hospitals in Singapore excepting the British Military Hospital. It also provides blood for private hospitals and practitioners in emergencies or when replacements are made by relatives of private patients.

Its laboratory additionally carries out serological and hæmatological investigations. The investigation of cases of hæmolytic anaemia has continued and the scope has been widened with the introduction of new laboratory techniques.

An investigation to determine if the present practice of bleeding donors every three to four months has any effect on the serum iron values is being conducted in conjunction with the Biochemistry section of the Department of Pathology. The investigation which should be completed in 1963 will show whether there is any need to modify current practice.

The department also undertakes to prepare and distribute to all hospitals the equipment for all types of intravenous therapy. During the year 16,410 blood giving sets, 17,070 saline giving sets and 15,895 vennesection sets were prepared and distributed. It is envisaged that by 1963 a move will be initiated for the introduction of disposable plastic giving sets. This move is necessary as the component parts of the present blood giving sets are no longer being manufactured.

The demand for blood transfusions continue to increase — at a rate of 7 per cent — each year; though this increased demand has to a certain extent been met by a corresponding increase in the number of donations received.

DONORS AND RECIPIENTS

Blood donations are given voluntarily and no charges are made for transfusions given. Recruitment of new donors is small and attempts to obtain replacements of blood from relatives of patients has not been too successful.

The service is still very dependent on the small panel of regular donors. The largest contributors, who are increasing in numbers, are from the local population. In proportion to their size, the European community and the armed services make a substantial and important contribution.

The largest number of transfusions were given to Chinese patients and were more than the donations received by members of this community. In all the other racial groups, the number of donations exceeded the transfusion given.

The record of the donors and recipients is given in table 172.

Table 172

DONORS AND RECIPIENTS, 1958–1962

	Donations received	Transfusions given
1958	9,952	9,622
1959	11,602	11,299
1960	12,874	12,595
1961	13,189	12,913
1962	14,183	13,775

	Donations Received			Transfusions Given		
	Male	Female	Total	Male	Female	Total
Europeans	2,858	263	3,121	66	162	228
Chinese	5,164	211	5,375	5,360	5,442	10,802
Indians	1,613	39	1,652	512	559	1,071
Malays	3,155	49	3,204	441	970	1,411
Eurasians	641	27	668	71	98	169
Others	158	5	163	85	9	94
	13,589	594	14,183	6,535	7,240	13,775

ANALYSIS OF DISTRIBUTION

General Hospital	8,495
Kandang Kerbau Maternity Hospital	4,184
Other Government Hospitals	381
Other Private Hospitals	534
R.A.F. Hospital Changi	181

ANALYSIS OF DONORS

Civilian Donors	12,348
Service Personnel	2,835
Relative Donors	2,533
New Donors	5,765
Rejected for Medical Reasons	636

PUBLICITY

The Donor Organiser has spared no efforts to appeal to large business and commercial firms, Government departments, youth organisations and to members of the armed services. These have been by talks, discussions, and by film shows.

Publicity through the Press and radio were made periodically.

Advertisements in the Press has been made possible by contributions by firms. Other firms have continued their valuable support by providing refreshments and cigarettes to blood donors.

In November 1962 a Blood Donor Competition was organised on a monthly basis with the prizes worth a total of $1,000 being sponsored by the Singapore Turf Club. The competition was a great success resulting in the setting of three records:

(i) a total of 1,628 blood donations received in one month — the highest ever;

(ii) 182 donors taken in one working day — representing a rate of 30 donors every hour, and;

(iii) 124 donors taken at a mobile session by one doctor.

Chapter Twenty-six

PHARMACEUTICAL SERVICE AND STORE

STAFF

This section comprises the Central Medical Stores, Pharmaceutical Manufactory and Dispensaries. The activities of this section were under the supervision of Mr. S. K. Lingam, Dip. Pharm. M.P.S. The staff position at the end of the year is given in Table 173.

Table 173

STAFF OF THE PHARMACEUTICAL SERVICE

Institution	Pharmaceutical Chemist	Pharmacists	Pupil Pharmacists	Dispensing Assistants
Medical Headquarters ...	—	1	—	—
Govt. Pharm. Lab. and Store	2	4	—	8
General Hospital ...	1	4	3	42
Kandang Kerbau Hospital ...	—	2	—	7
Tan Tock Seng Hospital ...	—	2	—	9
Trafalgar Home	—	1	—	1
Thomson Road Hospital ...	—	1	—	3
Woodbridge Hospital ...	—	1	—	1
Middle Road Hospital ...	—	1	—	4
Outpatients' Services ...	—	4	—	17
Total ...	3	21	3	92

The pharmacist on the staff of the Ministry Headquarters is engaged in full-time duties as Inspector of Poisons and Dangerous Drugs. His duties include inspection of poison stores, checking of poison and dangerous drug records, checking of inward declarations for medicine to determine if any poisons are imported by non-authorised persons. On information given by the inspector, several prosecutions for offences under the Poisons Ordinance were instituted by the O.C. Commercial Crimes. During the year a spate of undesirable advertisements to treat diseases prohibited under the medical (Advertisement and Sale) Ordinances was published by local papers. The offending advertisements were referred to the S.A.G. and O.C. Commercial Crimes and a few successful prosecutions were effected. In several instances it was not possible to proceed against advertisers because of the limitations of the Ordinance. A committee of Ministry officials is studying the problem with a view to drafting legislation to control such advertisements more effectively.

The shortage of pharmacists continued during the year as a result of which six vacancies for pharmacists remained unfilled. Twelve probationer dispensing assistants were recruited during the year to fill vacancies arising from retirement of staff and opening of new clinics. There is a scarcity of experienced dispensing assistants for posting to new dispensaries, as about half the number in the service is still under training.

SUPPLIES AND COST OF DRUG

The volume of supplies to hospitals and clinics increased by 15 per cent over 1961, largely as a result of increased outpatient attendances. It is estimated that the hospitals and clinics spent about 2.5 million dollars on drugs, chemicals, surgical equipment, dressings, crockeries and sundries. Of this amount, the cost of drugs represents 1.8 million dollars. Generally, the prices of individual items of drugs and chemicals have remained steady, but the prices of some major items, e.g. antibiotics, and antihistamines have came down during the year.

Table 174 below gives the main items of expenditure on pharmaceuticals. About 70 per cent of the total expenditure on drugs is accounted for by these items. The expenditure on antibiotics amounted to about $431,000 as compared to $360,000 in 1961. Almost twice as much streptomycin was used in 1962 as compared to 1961 due to the increased use of it by the T.B. clinics. The increase in the cost of tranquillisers and antihistamines is due to the high cost of patent materials. The manufacture of these items was abandoned after it was known that the manufacture of such items was precluded by patent rights. One item of interest is the cost of P.A.S. and I.N.H. tablets which is the principal drug used in the treatment of tuberculosis. A total of 54 million tablets at a cost of $332,000 was consumed during the year. The consumption of insulin increased in spite of increasing use of tolbutamide which is effective orally. Considerable difficulty was experienced in the control of stocks since many drugs were superceded by new ones, but every effort was made to use up existing stocks before new drugs were introduced. A Central Drug Advisory Body to regulate and control the introduction of new drugs and to co-ordinate treatment with drugs of proved value would assist the work of this department and eliminate wasteful expenditure.

Table 174

MAIN ITEMS OF EXPENDITURE ON DRUGS AND PHARMACEUTICALS 1962

	1961 Quantity	1961 Cost	1962 Quantity	1962 Cost
Tetracyclines	—	122,900	—	144,150
Streptomycins	518,500 gm.	61,350	970,800 gm.	105,130
Procaine Penicillin Injections	499,190 mu	50,320	491,400	45,800
Penicillin Vitamin Tablets ...	5,932,900	60,000	8,182,000	75,230
Chloramphenicol ...	—	56,700	—	55,040
Penicillin Injs. ...	94,000 mu	9,300	81,500	6.530
All Antibiotics	—	360,570	—	431,880
Sod. Aminosalicylate and Isoniazid	—	202,500	—	332,700
Intramascular Iron Injections	—	—	28,000 amps.	47,230
Corticosteriods ...	—	60,700	—	67.340
Vitamins	—	44,200	—	52,330
Sulphonamides ...	4,160 kgs	76,000	4,185 kgs	61,030
Antihistamines ...	—	28,360	—	44,420
Tolbutamide Tabs. ...	1,818,900	17,000	5,796,000	116,250
Codeine Phosphate ...	300 lbs.	54,500	200 lbs.	27,110
Chlorpromazine	—	4,000	—	72,290
Insulin (Plain P.Z. and Lente)	11.6 mu	13,900	18.8 mu	24,290
Alcohol (B.P. and Industrial)	25,200 gal.	48,920	6,300 gal.	11.220
Acetozalamide (kilos) ...	10 kilos	760	—	—
Cod Liver Oil ...	3,643 gals.	16,500	—	—
Total . .	—	$927,910	—	$1,288,090

STORES

The total quantity of stores purchased during the year amounted to about 3.2 million dollars. Total value of stores supplied and delivered on 10,352 orders amounted to a little over 3 million dollars. There was an increase of 2,000 orders above that of 1961. In spite of the increase in the work, no additional stores staff was recruited. Some delay in executing orders was noticed, but it is hoped to speed up supplies by recruiting two additional Storemen / Packers in 1963. A large proportion of stores was consigned by ship which necessitated handling 817 bills of lading involving collection of 8,787 large and small packages from the Harbour. In addition 1,500 packages were received by air, post and rail.

With the opening of new outpatient clinics in the rural areas the total number of units to be served was 156 at the end of the year. Delivery of stores was effected at monthly intervals, but many of the units were served more often to fill urgent requests. Three trucks set aside for this job were found inadequate for the job and it is proposed to expand the number of vehicles to four in 1963.

MANUFACTURING LABORATORIES

At the beginning of the year, the Tablet Laboratory extension was completed at a cost of $40,000. This laboratory is now equipped with several rotary tabletting machines, and other essential equipment to produce a complete range of medicines in tablet form. The accommodation and facilities in the saline, wets and injection laboratories is inadequate and primitive as a result of which the desired production levels were not achieved. This resulted in delays in executing orders for essential medicines. A proposal to build new laboratory accommodation is receiving attention. A new Cochran Boiler with adequate steam capacity was purchased at the end of the year and is expected to be put into operation in the early part of 1963.

Table 175 shows the production of pharmaceuticals for the years 1959 to 1962. A considerable increase in the manufacture of tablets was achieved in 1962 due to the improved facilities provided by the new extension. The production levels of the other laboratories showed some increase over 1961 figures, but more could have been achieved with proper facilities.

The nett value of production for the years 1959 — 1962 is shown in Table 176. The value of production in 1962 was a little over a million dollars, which is a 15 per cent increase over that of 1961.

The local manufacture of pharmaceuticals has contributed considerably towards lowering of the cost of these items, since freight and handling charges are eliminated and bulk chemicals are available at a fraction of the cost of finished articles. As an example the cost of 145,000 bottles of dextrose and saline solutions for injection if obtained through commercial suppliers on tender would amount to about $145,000 whereas the cost of the item exclusive of containers, which are reused, is about $14,500 only. Similar savings can be shown for other items manufactured by G.P.L. & S. The staff employed in the manufacture of pharmaceuticals number about fifty most of whom are Division IV Officers.

Table 175

MANUFACTURING PHARMACEUTICAL PRODUCTS

	1959	1960	1961	1962
Tablets (Million) ...	90.7	105.8	89.4	124.6
Ampoules (No.)	593,569	608,352	615,680	672,658
Multidose Inj. Vials (No.) ...	20,690	28,810	28,520	30,319
Sterile Transfusion Fluids (pint bottles)	104,061	144,090	144,640	145,435
Ear/drop, Eye/drop Vials, Nose Spray (No.) ...	69,040	99,230	111,980	138,671
Tinctures, Infusions, Extracts (gallon)	4,800	5,500	7,990	8,569
Emulsions (gallon) ...	700	780	760	810
Mixtures, Lotions, Liniments (gallon)	11,700	15,200	18,800	24,930
Antiseptic Fluids (gallon) ...	8,600	9,500	10,170	15,448
Linctus and Syrups (gallon) ...	11,300	16,200	18,110	19,589
Ointments and Creams (lb.) ...	20,000	21,600	20,220	25,264
Ointments and Creams (tubes)	80,900	69,800	76,260	96,543
Laboratory Reagents Soln. (lt.)	490	1,100	430	405
Suppositories and Pessaries (No.)	63,830	88,600	39,130	75,533
Dressings (tin × 20's) ...	—	—	2,740	3,501
Granules (lbs.)	—	—	5,740	6,273
Smelling Salt (1 oz. bottle) ...	—	—	670	509
Capsules	—	—	500	1,224

Table 176

PRODUCTION FOR PAST 4 YEARS

(Nett value of materials used)

	$
1959	800,163
1960	847,040
1961	886,877
1962	1,025,864

The analytical control of drugs and preparations were performed by the Chief Chemist, Department of Chemistry. The Senior Pathologist undertook to perform sterility tests and estimation of antibiotic potency of preparations The co-operation of these officers is greatly appreciated.

PART IV

DEPARTMENT OF CHEMISTRY AND INSPECTORATE OF DANGEROUS AND HAZARDOUS MATERIALS

Chapter Twenty-seven

DEPARTMENT OF CHEMISTRY AND INSPECTORATE OF DANGEROUS AND HAZARDOUS MATERIALS, 1962

GENERAL

FURTHER progress has been made in the integration of the City Analyst's Department with the Department of Chemistry. The Estimates for this year is a combined Estimates of these two departments. At the end of May the staff, apparatus and chemicals of the City Analyst's Department were housed at the Department of Chemistry and these two departments have since functioned smoothly as one department.

The main function of the department is to provide chemical and allied scientific services to various Government departments. The major part of these services are required by the Customs and Excise Department, the Singapore Police Force, the Health Division, the Hospital Division, the City Council Water Department, the Sewerage Section of the Public Works Department and the Parks and Recreation Division. The Police Authorities of North Borneo and Sarawak also make use of the chemical services provided.

The staffing position at the end of the year is shown in Appendix I. Because of the integration of the City Analyst's Department with the Department of Chemistry, the posts of City Analyst and Deputy City Analyst were replaced by one new post of Deputy Chief Chemist and Deputy Chief Inspector of Dangerous and Hazardous Materials, Grade *G*. The post of Chief Chemist and Chief Inspector of Dangerous and Hazardous Materials was upgraded from Grade *G* to Grade *E*. Mr. Chia Hong Hoe, Assistant Analyst, acted as Deputy Chief Chemist and Deputy Chief Inspector of Dangerous and Hazardous Materials during the year.

In August, Dr. Lee Kum Tatt ceased to be a chemist in this Department on taking up a new appointment of biochemist in the Department of Pathology and one vacant post for chemist was filled with the appointment of Mr. Phang Pui Yeong B.SC. (Hons.). Owing to lack of applicants and suitable candidates, the other three vacant posts for chemists could not be filled. In September, Mr. Chou Kai Chih, Chemist, returned from training in Australia. He was awarded a degree of Master of Science in Agriculture by the University of Sydney after just over two years research in animal nutrition at the Department of Animal Husbandry.

During the year, one laboratory assistant resigned, one typist and two clerical officers were transferred to other departments.

Groups of students from Queenstown Secondary School, Nanyang University, Monk's Hill Secondary School, Beatty Secondary School, Victoria School, Bartley Secondary School, nine Biochemistry Honours students and six Diploma in Public Health doctors visited the Department of Chemistry.

In July a group of seven leading public health personnel from Afghanistan, Burma, India, Indonesia and Thailand, sponsored by the World Health Organisation, visited the Department and they were conducted round the Food and Drugs Laboratory and the Customs Laboratory. The Acting Deputy Chief Chemist, Mr. Chia Hong Hoe, lectured to them on "Food Legislation and Food Quality".

The Senior Chemist, Mr. Lim Chin Hua, gave two lectures to Criminal Investigations Department trainees, one lecture to cadet inspectors and two lectures to non-commissioned officers on forensic science as an aid to Police investigations.

There were 57 court attendances this year as compared with 52 court attendances in 1961. Approximately 40 per cent of these court appearances were in connection with opium cases.

Approximately 456 photographs were made to clarify certain reports, the majority of which were connected with document examination.

The number of samples analysed and/or examined was 46,629. This figure included the samples of water, swimming pool water, food and drugs from City area and other samples formerly analysed by the City Analyst's Department. The numbers of samples analysed and/or examined in 1961 by the Department of Chemistry and the City Analyst's Department were 16,473 and 26,127 respectively making a total of 42,600. The increase in the number of samples was approximately 9 per cent of the number examined in 1961. The major contributing factor to the increase was the increased number of water samples from the City Water Department in 1962, in which year there was no water rationing or strike by the public daily rated workers. Samples from the Water Department showed an increase of approximately 17 per cent on previous year's samples, 19,721 as compared with 16,798 for 1961. There has been an increase in samples from the Customs and Excise Department, the Police Force, food and drugs samples from the City Health Department, medicine and drugs samples from the Government Pharmaceutical Laboratory and Store and swimming pool waters from the Parks and Recreation Division. Samples from Public Works Department, non-official sources and other government departments showed a decrease.

The number of samples received for analysis and/or examination from the various sources of origin were as follows:

Customs and Excise Department	6,848
Medical Department	5,264
Police Force	3,764
Water Department	19,721
Public Works Department	3,028
Parks and Recreation Division	4,180
Other government departments	1,004
Commercial firms and non-Malayan departments ...	2,820
	46,629

The total samples analysed and/or examined by the combined City Analyst's Department and the Department of Chemistry this year as compared with those for the past five years is shown on the chart. A summary of the work of the various sections is shown in Appendix VIII. Publication in scientific journals is shown in Appendix IX.

The Fees (Department of Chemistry) Order, 1948 was revised and replaced by the Fees (Department of Chemistry) Order, 1962. The work of the Department of Chemistry which collects revenue are statutory inspection of tankers and oil tanks in ship for freedom of inflammable vapour prior to docking for repairs, statutory checking of flash points of non-dangerous petroleum prior to import, denaturation of alcohol for exemption of duty, analysis of samples from the Water Department and samples of food, drugs, water, etc. from various commercial firms. The fees earned amounted to approximately $203,150.

FORENSIC SECTION

The forensic section, showed an increase over the previous year both in the number of cases and in the number of exhibits examined. The number of exhibits rose from 3,726 in 1961 to 3,963 in 1962, and the number of cases increased from 885 in 1961 to 932 in 1962.

However, there was some decrease in certain types of exhibits such as chandu and opium, gold, illicit liquors, tobacco and miscellaneous exhibits as compared with those for the previous year. In all other types of exhibits, there were increases in exhibits especially in blood and semen, documents, firearms, drugs, adulterated liquors, arson and vehicles.

Visit to scenes of crimes were carried out as usual by the chemists on several occasions both during and outside office hours.

Arson

Twenty-four cases of arson including attempted or suspected arson were investigated involving forty-one exhibits covering a wide variety of objects.

The most common method used by the arsonists to start a deliberate fire was to use petrol or kerosene either poured directly on buildings or soaked into pieces of rags which were then lighted. From the nature of the substances used, the evidence was likely to be destroyed by the intensity of the fire. In spite of this, there were seven cases in which kerosene was isolated and three cases in which petrol was detected.

Four visits at frequent intervals were made to the Happy World Park to investigate fires in the stalls. The fires in all these cases occurred shortly after midnight when the Park was completely closed. The possibilities of electrical short circuit was eliminated as the main electric switch to all the stalls was switched off at midnight. In all the four visits, the stalls were so badly burnt that the determinations of the origin and the source of the fires were not only difficult, but sometimes impossible. However, on one occasion, the watchman at Happy World Park, whilst on his rounds at 2.15 a.m. noticed some smoke coming out from one of the stalls. He broke into this stall and put out the fire. At the scene of the fire, pieces of sticks with partially burnt cloth wrapped on one end, used as torches, were found. Analysis of the partially burnt cloth revealed the presence of a volatile inflammable mineral oil. The discovery of the pieces of sticks with the cloth containing an inflammable oil very strongly suggested arson.

In another case, kerosene was used to set fire to a car. Near one of the tyres of the car was found one bundle of clothings. Kerosene was isolated from this bundle of clothings.

In one case, arson was proved by the discovery of a crude time delay device to start the fire. This device was found on the roof of an attap hut and was in the form of a bunch of match sticks tied to a joss stick. Also found at the scene of the fire were one tin with a canvas wick, one piece of cloth and a few match sticks. Traces of kerosene was detected in the tin.

Blood and Semen Stains

The number of exhibits under this heading showed an increase over the number for the previous year.

The majority of these exhibits were clothings. The others included knives, choppers, swords, screwdrivers, axes, hammers, iron pipes, wooden poles, wooden stools, etc.

Of the total of 849 exhibits, 749 were for the examination of blood, and of these 132 gave negative results. The majority of the remainder gave a positive precipitin reaction for human blood and of these positive ones, more than half was grouped as well. The grouping of dry bloodstains is an extremely tedious and time consuming process. This grouping is only carried out whenever there is any likelihood of additional valuable evidence being obtained.

In one unusual case of murder, the body of a dead person was found inside a lift. One suspect, who was a butcher, was found near the scene of the crime. He was wearing Wellington boots and there were some red stains on the boots as well as on both his legs. An examination of the red stains on the boots and on his legs revealed that they were pig's blood and not human blood.

Of the exhibits submitted for the examination of seminal stains, about 25 per cent were successfully confirmed by the presumptive tests for semen and the isolation and identification of spermatozoa.

Chandu and Opium

Chandu and opium exhibits showed a slight decrease in number from the previous year.

The majority of the exhibits was submitted by the Police Force. These exhibits included small two hoon packet of chandu, opium pipes and needles. Customs' exhibits consisted of larger quantities of raw opium for which morphine and moisture contents were determined to assess their value as a pharmaceutical commodity; 48 such assays were carried out.

Out of the total exhibits, 20 were found to be not chandu or opium.

The "non-official" samples in the table were mostly exhibits from the North Borneo and Sarawak Police.

There was also one case consisting of six exhibits submitted by the Royal Air Force in Singapore.

Drugs

The number of exhibits examined for the presence of listed poisons or dangerous drugs showed an increase when compared with that for last year.

A large number of the exhibits submitted was for the detection of morphine. Among the exhibits submitted were white powder, liquid and utensils such as tins and basins. In cases of persons charged for the administering of morphine to addicts, the hypodermic syringes were also submitted for examination of traces of morphine inside the syringes.

The Customs and Excise Department submitted two samples of white powder which, on analysis, were found to be heroin hydrochloride. This drug is not commonly encountered in Singapore.

There were also 36 exhibits of Indian hemp examined this year.

Three exhibits labelled as "poultry formula" were found to contain auromycin and terramycin.

One sample of powder used as a fly killer was found to contain a chlorinated organo phosphorus compound.

Other poisons encountered were carbromal, brommal, methyl testosterone, sulphonamide and dihydrostreptormycin.

Firearms

The number of exhibits and cases connected with firearms showed an increase over that for last year. As usual, the cases involved the examination of firearms for evidence of recent firing and/or the comparison of bullets and cartridge cases to confirm that a particular firearm had been used to fire a particular bullet. There were also several cases where clothings of persons, who had been shot, were sent in to determine the range of firing by examination of the pattern of powder marks left on the clothing by the firearm.

An unusual case involved the examination of a leather pouch used for carrying ammunition. One police constable, after performing his duties, placed all the twelve rounds of .38 ammunition in this pouch before returning them to the armoury. It was alleged that the pouch fell from his hand and the ammunition exploded. An examination of the inside of this pouch revealed the presence of products of recent firing such as nitrite and nitrate thus confirming that the ammunition had exploded inside this pouch.

Another case concerned the murder of a woman by a shot gun. Besides the usual examination for the products of recent firing of the shot gun, the determination of the firing range, and the examination of the cartridge case, the skin from the deceased's right hand was also submitted for the examination of gunpowder residues.

There was one case of twenty-five shotgun cartridge cases submitted by the Sarawak Police. One of the cartridge cases was found at the scene of the crime whereas the other twenty-four cartridge cases were fired from twenty-two different shotguns. The cartridge case found at the scene of crime was compared with the cartridge cases fired from the twenty-two different shotguns to see whether any of the shotguns fired the cartridge case found at the scene of crime. No matching of the fire lines was obtained.

Gold

There were two Customs' cases involving gold. One case involved 190 bars. Two samples were taken for analysis and were found to contain 99.7 per cent of gold.

In another case, 42 pieces of yellow coins were submitted, of which two were analysed and found to contain 91.6 per cent of gold.

Liquors

Liquors suspected to be adulterated were received from the Police. The majority of these were beers and stouts.

There was one case involving 132 bottles of liquor labelled as beers and stouts of some well known brands. On analysis, 79 bottles of liquors were found to be adulterated when compared with genuine beer and stout samples.

The number of illicit liquor cases showed an increase. As usual, all the exhibits were submitted by the Customs and Excise Department. They consisted of both fermented rice mash and distilled spirit. Most of these were certified as "intoxicating liquors" having alcoholic contents of over 2 per cent proof spirit.

Three samples of mash were not certified as "intoxicating liquors" as the alcoholic contents were found to be less than 2 per cent proof spirit.

There was also one case consisting of 20 bottles of liquor labelled whisky which were seized as uncustomed goods.

Tobacco

The number of tobacco cases showed an increase in 1962, more than double the number of cases received in 1961 although the number of exhibits was less than that submitted last year.

As usual, the exhibits were packets and cartons of different brands of cigarettes, tobacco and cigars. These exhibits, which often involved large number of sticks of cigarettes and cigars, had to be weighed and examined and proved to be tobacco for the benefit of the courts.

Vehicles

Out of 62 exhibits submitted, more than half were for the examination of erased engine or chassis numbers. These included a number of bicycles, cars, motor cycles and lorries. In more than half of these cases, the erased numbers were either fully or partially developed. Six vehicles were submitted by the Registrar of Vehicles and the remaining exhibits were submitted by the Police.

Vehicles were also examined in cases of arson. There were two cases in which acid or alkali was suspected to have been thrown on to the motor cars, causing the paints to blister and peel off. On examination, no acid or alkali was detected on the paint flakes of the cars. However, the detection of traces of waxy material on the paint flakes suggested that an organic paint remover had been used, since the paint remover usually consists of a blend of organic solvents in which a small amount of wax is usually incorporated.

Vehicles were also submitted by the Police in cases of hit-and-run accidents. There was one case involving a car and a scooter. The collision of the vehicles was proved by comparison of paint smears, and also by matching of the heights of the dents on the car and the dents on the scooter.

Another hit-and-run case involved a car and a trishaw. Besides taking of samples for the usual comparison of the paint smears, one strand of hair was also recoverd from the front windscreen of the car and was found to be human hair. Also found at the scene of the crime were two pieces of glass. The edge of one of these two pieces of glass was found to fit one of the edges of the cracked glass still adhering to the headlamp of the car, thus connecting this car with the scene of the accident.

Miscellaneous

Miscellaneous exhibits connected with a wide variety of crimes required the non-routine type of investigations and special treatment.

More than one-third of these exhibits were from acid throwing cases. The most common acid detected was sulphuric acid, but there were also a few cases involving hydrochloric acid, nitric acid and formic acid. Two of these cases, involving formic acid were from Sarawak.

There were one case involving pepper throwing and one case involving the throwing of chilli powder. Both these cases were connected with hit-and-run wage robberies. The pepper or chilli powder was thrown into the eyes of the victims thus temporarily blinding the victims before the crime was committed. Another case of pepper throwing was in connection with causing hurt.

There was one case of burglary in which a large wire cutter was used to cut the handle of a lock. The police recovered this wire cutter from the car of the suspected persons. On examination, the marks on the handle of the lock were found to match the marks made by this wire cutter on another portion of the handle of the lock, thus proving that this wire cutter had been used to cut the lock.

Another case involving also a wire cutter and cut handles of locks and cut chains submitted by the police was successfully solved by connecting the wire cutter with the lock and the chain.

There was also one case involving the marks left by a pair of scissors which was suspected to have been used to force open the door of a cabinet. The scratch marks left on the door of the cabinet were found to match the tip of one of the blades of the suspected pair of scissors.

One false labelling case, involving several well known brands of hair oils, was investigated. The contents of some of these hair oils, on analysis and comparison, were found to be different from those of the genuine brands of hair oils.

One case of counterfeiting coins was investigated. Exhibits submitted included a large number of "20 cents" coins, pieces of metal, plaster of paris moulds, some white powder and a kwali. On analysis, the coins and the metal pieces were found to contain lead, tin, antimony and copper. One genuine coin submitted was found to contain copper and nickel only.

An unusual exhibit submitted by the Police consisted of one "bottle shaped" wax with one length of rope through the centre of the wax, serving possibly as a fuse. It was suspected to be a home made bomb, and a request was made by the Police to examine this exhibit for the presence of any explosives. After carefully cutting through the middle of this exhibit, it was found that the whole object consisted of only wax with a wick in the centre, which probably served as a form of home made candle designed to burn for a long period.

Documents

This year saw an appreciable increase in the number of cases of documents examined by the Acting Document Examiner. In all, 189 cases involving a total of 1,148 documents came under investigation, as compared against 151 cases comprising 989 documents for the previous year.

As usual, the majority of the cases (about 75 per cent) concerned the examination and identification of handwriting and signatures written in Chinese and English, and in a few cases, Romanised Malay. The rest of the cases involved examination to prove falsification and tampering of documents such as identity cards, stamps, envelopes, Postal Savings Bank books, etc., and also comparison to establish identity of stamp impressions and typewriters.

A good example of the use of handwriting identification was in connection with a case of house-breaking and stealing in which Chinese handwriting statement of a vengeful nature was found scribbled on a stock-book and a table-top at the premises. Police investigations led to the arrest of two suspects: one was identified by the finger-prints left by him while the other was identified by the characteristic similarities in the formations of the Chinese writing established by comparison of his specimen handwriting and the scribbled writing left on the scene.

There were two cases of suicide which called for the assistance of the Acting Document Examiner in confirming that the suicide notes left behind were actually the handwriting of the deceased, thereby removing doubts of foul play.

Photography was widely used for illustration purposes in the investigation of documents. In a case of attempted extortion, a suspect was trapped in an ambush while receiving the extortion money and the police raiding his room later found a writing pad on the first page of which were found faint indented impressions. Oblique-lighting photography brought about a visible print of these indented impressions and showed clearly that they were the impressions of one of the two extortion letters connected with the case.

In addition to documents received from the Singapore Police, who submitted the majority of the exhibits, documents were received from the Departments of Immigration, Postal Services Department, the State Advocate-General's office, the Education Department, the Labour Department and the Housing and Development Board.

In a Postal Services Department case involving the loss of postal orders from a posted envelope, the envelope in question was submitted for examination for evidence of tampering. Two circular date-stamps found across the flap showed no obvious evidence of mal-alignment, but, on careful examination, it was discovered that a portion of the instrokes which formed a part of the written address across the flap was found to be actually located under and well within the sealed flap. This, together with the visible "feathering" of the ink writing around the flap, provided evidence to confirm the suspicion that the questioned envelope had been opened and re-sealed.

Besides the Singapore Police and Government Departments, the Acting Document Examiner was also called upon to assist in the examination of documents submitted by the Sarawak Constabularly, the Special Investigation Branch of the British Royal Military Police, the North Borneo Police and various legal firms.

Table 177

FORENSIC SECTION

DISTRIBUTION OF WORK 1962

Class of Work	SOURCE						
	Customs	Medical	Police	Other Depart-ments	Non-Official	Total Samples	Total Cases
Arson	..	..	41	..	..	41	24
Blood and Semen ..	..	2	818	2	27	849	205
Chandu and Opium ..	105	..	587	6	15	713	225
Documents ..	..	1	1,032	38	77	1,148	189
Drugs	40	13	214	..	3	270	85
Firearms Cases ..	..	1	160	..	25	186	25
Gold	3	..	..	..	..	3	2
Liquors:							
Adulterated ..	..	..	156	..	..	156	3
Illicit ..	185	..	..	..	..	185	36
Tobacco	62	..	..	..	..	62	19
Vehicles	..	..	56	6	..	62	47
Miscellaneous ..	8	6	248	4	22	288	72
Total ..	403	23	3,312	56	169	3,963	932

HEALTH SECTION

Food and Drugs Ordinance

1,762 samples were submitted for examination by the Environmental Health Section, Public Health Division of the Minstiry of Health, mainly in connection with the enforcement of the Sale of Food and Drugs Ordinance. A few of the samples were in connection with the licensing of food factories. Of the total number of samples, 82.1 per cent consisted of foodstuffs and 11.7 per cent of medicine and drugs. The remaining 6.2 per cent consisted of cosmetics and colouring matter used in food.

Foodstuffs

The number of formal food samples received was 496, of which 113 samples were found to be adulterated, below standard or otherwise defective, and appropriate certificates were issued for these samples. The proportion of unsatisfactory samples was 22.8 per cent (vide Table 179 for details of the adulteration and other irregularities).

As a result of an amendment of regulation 19 of the Food and Drugs Regulations, 1957 in 1961, which introduced a permitted list of colouring matter in place of a prohibited list, much of the efforts of the Food and Drugs Inspectors were concentrated on sampling foodstuffs using artificial colours. Three non-permitted coal-tar dyes were found to be widely used in locally prepared foods. They were a yellow coal-tar dye, metanil yellow, very widely used in bean cake (*tow kua*), a reddish-orange dye, Orange II, in roasted sweet meat (*char siew*) and a violet dye, Rhodamine B, in syrups, aerated water, cakes and sweets. In all the cases where non-permitted dyes were discovered, the manufacturers were given several warnings by the Environmental Health Section to use colours listed in the permitted list.

Many samples of groundnut oil were found to be non-genuine, the chief adulterant being the cheaper coconut oil. Nineteen formal certificates were issued, compared with eleven in 1961 and three in 1960.

Twenty-four informal samples of gourmet powder were analysed and it was found that only three samples were essentially sodium glutamate monohydrate. The remaining samples were found to consist of varying amounts of mono-sodium glutamate monohydrate in combination with lactose and/or sodium chloride (common salt). In one case the sample was entirely lactose and in another case boric acid, a non-permitted preservative, was detected. All the samples had names which included "Ve", "Aji" and/or "Moto" to correspond closely to the well-known brands of gourmet powder such as "Ve-Tsin" and "Aji-no-moto".

Fruit samples, which had been regularly tested for their arsenic contents because of the previously common use of lead arsenate sprays for protecting the fruits, were also tested in 1962 for argano-phosphorus insecticides qualitatively. Several samples were found to give a positive test for organo-phosphorus compounds. More work on the organo-phosphorus insecticides would be undertaken in 1963.

Medicine and Drugs

A total of 206 samples were submitted for examination, of which 130 samples (i.e. 63.1 per cent) comprised vitamin preparations in one form or another and 41 samples (i.e. 19.9 per cent) comprised fever preparations.

Fifty-nine of the 130 samples of vitamin preparations were formal samples, of which seven were found to be deficient in their vitamin contents. Certificates were issued for these unsatisfactory samples. One formal sample of A.P.C. tablets and one formal sample of tincture of iodine were also found to be unsatisfactory (vide Table 180 for details of irregularity in the drug samples).

One informal sample of Chinese-made piles powder was found to have 28 per cent copper sulphate ($CuSO_4$, $5H_{20}$) as an ingredient.

Other Samples

The samples under this heading consisted of 77 informal and 33 formal samples of colouring matter and cosmetics, such as hair dye, face powder, face cream and skin tonic, and one commercial sample of scalp cream for growing hair.

The samples of colouring matter were submitted for compliance with regulation 19 of the Food and Drugs Regulations, 1957, which deals with colouring matter permitted to be used in foodstuffs. Several non-permitted colours were found as a result of the examination carried out.

Thirty-one samples of cosmetics were submitted to determine whether they infringed regulation 29 of the Food and Drugs Regulations 1957, which prohibits the import and sale of cosmetics or toilet preparations containing lead or its compound. One sample of black hair dye was found to contain barium peroxide and paraphenylene-diamine, both listed poisons in the Poisons Ordinance. A sample of moustache and eyebrow darkener was found to be based on nickel chloride.

Other Medicines and Drugs

The number of samples from the Government Pharmaceutical Laboratory and Store, which showed an increase last year to 944 samples, showed a further increase of 84 per cent this year to 1,739 samples. The 608 samples of anaesthetic ether received for testing for the presence of peroxides contributed largely to the increase. It was found that of these 608 samples, 289 samples (i.e. 47.5 per cent) failed the British Pharmacopoeia test in respect of peroxides. As usual the samples were received for assay and/or compliance with British Pharmacopœia standards. The vast majority of the samples tested were found to be up to the standard.

The Department also assisted the Government Pharmaceutical Laboratory and Store to solve problems arising from the storage and preparation of their medicines and drugs. Studies on the stability of sodium p-aminosalicylate and isoniazid tablets were made and advice given on how to overcome decomposition on storage of these tablets. A method was worked out for the purification of condemned paraldehyde. The purified paraldehyde obtained complied with British Pharmacopoeia requirements.

Forty-two samples of raw opium were assayed for their moisture and morphine contents for the Customs and Excise Department.

Metallic Contamination

From the routine samples of liquor submitted by the Customs and Excise Department for spirit strength determinations, 181 samples were checked for lead and copper contents. The samples which were checked included new brands of liquor and those brands which previously were found to contain high lead or copper. All the samples checked were found to have lead and copper within the statutory limits.

Table 178

HEALTH SECTION

DISTRIBUTION OF WORK 1962

Class of Work	SOURCE				
	Customs	Medical	Non-official	Total Samples	Total Cases
Food and Drugs Ordinance:					
(*a*) Foodstuffs:					
Formal	..	496	..	496	496
Informal	..	950	34	984	..
(*b*) Medicine and Drugs:					
Formal	..	115	..	115	115
Informal	..	91	..	91	..
(*c*) Other Samples ..	..	110	1	111	33
Medicine and Drugs:					
Other	42	1,739	8	1,789	..
Metallic Contamination ..	181	..	..	181	..
Total ..	223	3,501	43	3,767	644

Table 179

FOOD SAMPLES ADULTERATED OR OTHERWISE IRREGULAR

No.	Sample	Nature of Irregularity
2	Cakes	Contained non-permitted dye.
14	*Char Siew* (Roast Sweet Meat)	Contained non-permitted dye.
3	Chilli Powder	Adulterated with foreign material.
2	Chilli Sauce	Contained saccharin.
2	Chilli Sauce	Contained sulphur dioxide.
9	Coffee Mixture	Deficient in coffee.
1	Colouring Matter	Non-permitted colouring matter.
4	Coriander Powder	Adulterated with foreign material.
1	Ghee	Non-genuine, contained 5 per cent butter-fat.
19	Groundnut oil	Not genuine ground nut oil.
1	Jam	Label infringed Regulation 5 (1) (*d*).
3	*Kaya* (egg jam)	Contained non-permitted preservative.
1	Milk	Deficient in fat.
13	Milk	Deficient in solids-not-fat or contained added water.
1	Noodles	Contained boric acid, a non-permitted preservative.
1	Soya bean sauce	Content of benzoic acid excessive
2	Sweets	Contained non-permitted dye.
6	Syrup	Deficient in Vitamin C (ascorbic acid).
28	*Tow Kua* (Bean Cake)	Contained non-permitted dye.
113		

Total number of formal samples received	496
Number of unsatisfactory samples, for which certificates are issued	113
Percentage of unsatisfactory samples	22.8 per cent

Table 180

DRUG SAMPLES ADULTERATED OR OTHERWISE IRREGULAR

No.	Sample	Nature of Irregularity
1	A.P.C. Tablets	Deficient in phenacetin and caffeine
3	Cod Liver Oil Capsules	Deficient in Vitamin A
2	Multivitamin Tablets	Deficient in Vitamin A
1	Tincture of Iodine	Deficient in iodine and potassium iodide
1	Vit. A and D Concentrated Solution	Deficient in Vitamin A
1	Vit. B_1 Tablets	No Vitamin B_1 detected
9		

Total number of formal samples received	115
Number of unsatisfactory samples, for which certificates are issued	9
Percentage of unsatisfactory samples	7.8 per cent

WATER AND SEWAGE SECTION

Water

The total number of water samples examined amounted to 24,239 samples, comprising 19,163 samples (i.e. 79.0 per cent) submitted by the City Water Engineer and 4,421 samples (i.e. 18.3 per cent) of swimming pool water. The remaining 2.7 per cent of water samples, received from various sources, consisted of drinking, river, sea, aquarium and boiler water.

Drinking Water

A total of 18,868 samples of drinking water were received from the City Water Engineer for examination. These samples were submitted daily, except Sundays and public holidays, to determine the efficiency of the purification process at the various treatment works and to ensure that there is no deterioration of the treated water in the distribution system, and comprised the following:

	Samples
Routine Daily Water Samples —	
From treatment works and distribution system	11,706
From camp supplies	1,465
For fluorine test	5,386
Monthly samples from clear water tanks	58
Monthly samples of raw water	103
Water for special investigation	150
Total ...	18,868

The sources of the water supply of Singapore remained the same, and were the Tebrau River, several impounding reservoirs and the underground supply in Bedok. The treatment used at Tebrau Works was that employing "activated silica" in conjunction with small doses of lime and alum. At Gunong Pulai, Bukit Timah and Woodleigh, the conventional lime-alum treatment was used. For Bedok works, where the lime-alum treatment was previously employed, advice was given to the City Water Engineer to change the treatment to sodium aluminate and alum. This new treatment resulted in considerable saving in alum, since a dosage of 4 parts per million sodium aluminate and 60 parts per million alum was used to replace a dosage of 140 parts per million alum, which was necessary for satisfactory flocculation. Besides the saving in alum, the treated water using sodium aluminate/alum had better physical and chemical characteristics.

The excellent chemical quality of the water was maintained throughout the year. The average figures of the monthly tests on raw water and treated water are given in Table 182 and Table 183 respectively.

Further investigational work was carried out on the water from Johore River and Scudai River. These two rivers would be the new sources of water supply for Singapore. The Scudai River Water Scheme is expected to come into operation sometime in 1964.

5,386 samples of treated water were tested for their fluorine contents. This year is the sixth year of the fluoridation of the Singapore Water Supply. Daily results of the fluorine contents of tap water were sent to the Chief Dental Officer, Ministry of Health, who is making a survey on the benefits or otherwise of the addition of fluorine to water on the dental health of school children.

A number of water samples taken from several boreholes in the Fort Canning area were tested to determine the extent of the spread of the leakage from the Salt Water Tank at Fort Canning.

Arising out of a query by the City Electrical Engineer regarding the colloidal silica content of the City Water Supply, tests were carried out on six samples of water to determine their soluble and colloidal silica contents. It was found that soluble silica content was 4 parts per million and colloidal silica absent in all the samples.

Commercial samples from storage tanks in one of the neighbouring islands were found to be satisfactory. Both chemical and bacteriological analyses were carried out.

Swimming Pool Water

The Parks and Recreation Division of the Ministry of Labour submitted 4,087 samples of pool water from the following swimming pools:

	Samples
Mount Emily Pool	586
Yan Kit Road Pool	1,179
Farrer Park Pool	1,150
River Valley Pool	1,172
	4,087

These pools are all filled with fresh water, which are tested daily for the assessment of the degree of pollution which would give an indication of any necessary treatment.

334 commercial samples of swimming pool water were also received for testing from four social clubs, one seamen's club, three Royal Air Force Stations and a hotel.

River Water

The bulk of the river water samples were submitted by the Public Works Department and were taken from the following canals and rivers: Singapore River, Geylang River, Kallang River, Serangoon River, Sungei Whampoa, Jurong River, Katong Canal, Siglap Canal, Stamford Canal and Rochore Canal. The results obtained showed no improvement at all in the poor condition of some of the rivers.

The Special Sub-Committee on Trade Waste Discharge, of which the Chief Chemist and Deputy Chief Chemist are members, has drawn up standards of trade effluents for discharge into public sewers and rivers. These standards would be legalized when the Local Government Integration Ordinance comes into effect. Meanwhile a number of factories, which were discovered to have discharged into the rivers highly polluting trade effluents, have been advised to take appropriate action to treat their trade effluents before discharge.

Sea Water

Forty samples of sea-water were received from the Primary Production Department, Ministry of National Development for pH tests. Six samples were received from a commercial firm for determination of sodium chloride content.

Aquarium Water

Two samples of aquarium water were submitted weekly by the Van Kleef Aquarium, one from the Salt Water Reservoir and the other from the fresh water reservoir, for examination to determine the efficiencies of the purification plants in maintaining a satisfactory water for the fishes.

Boiler Water

The City Water Engineer submitted 291 samples from the Woodleigh Works for analysis and for advice on treatment. The treatment recommended to remove hardness and to prevent corrosion employs dosing of the boiler water with trisodium phosphate.

Other Water

Nineteen samples were received for analysis. One sample from the Public Works Department was analysed to determine its suitability for use in concreting. One sample of rain water from the Meterological Department was examined to identify the black substance, which as reported by eye witnesses to have come down from rain clouds with the rain. Microscopic examination of the black substance revealed the presence of vegetable debris and carbon soot, suggesting that the black substance was partially burnt vegetable matter. The other 17 samples were received from commercial sources to determine their suitability for various industrial uses.

Sewage

All except four samples of a total of 2,714 samples were received for analysis from the Public Works Department, comprising the following:

	Samples
Sewage, sludges, top-waters and effluents from sewage disposal works	1,147
Septic Tanks	1,509
Activated Sludge Plants	54
	2,710

The sewages, sludges, top-waters and effluents were submitted by Kim Chuan Road Sewage Disposal Works (Phases I and II) and the Serangoon Sludge Disposal Works. Phase III of Kim Chuan Road Sewage Disposal Works was under construction in 1962 and should be ready to be put into operation in 1963. The treatment of the sewage at Kim Chuan Road is by the activated sludge process and the effluent discharges into Serangoon River.

Samples from private purification plants amounted to 1,509 samples. These samples came from 464 spetic tanks out of a total of 620 plants, which were in our record. The results of the effluents from these plants were generally poor, exceeding the suggested standards of 10 parts per million for oxygen absorbed in 4 hours and 30 parts per million for suspended solids.

The four commercial samples came from Royal Air Force stations at Tengah and Seletar.

Table 181

WATER AND SEWAGE SECTION

DISTRIBUTION OF WORK 1962

Class of Work	SOURCE						
	Medical	Water Department	Public Works Department	Parks and Recreation	Other Departments	Non-Official	Total Samples
Water:							
Drinking ..	96	18,868	1	..	..	54	19,019
Swimming Pool ..	..	..	..	4,087	..	334	4,421
River	34	4	305	..	2	1	346
Sea	..	..	..	..	40	6	46
Aquarium ..	..	..	..	92	..	..	92
Boiler	..	291	..	..	..	5	296
Other	..	..	1	..	1	17	19
Sewage	..	..	2,710	..	..	4	2,714
Total ..	130	19,163	3,016	4,179	43	421	26,953

Table 182

RAW WATER

Average results of Monthly samples, 1962

(Results in Parts Per Million)

——	Tebrau River	Pontian Reservoir	G. Pulai Reservoir	Pierce Reservoir	Macritchie Reservoir	Bedok Wells
Ammoniacal Nitrogen ..	0.01	0.04	0.04	0.01	0.02	2.09
Albuminoid Nitrogen ..	0.05	0.13	0.06	0.12	0.10	0.16
Nitrite Nitrogen	trace	absent	trace	absent	absent	trace
Nitrate Nitrogen	0.08	0.04	0.06	0.02	0.03	0.06
Carbon Dioxide	2.6	1.2	2.6	1.6	1.2	42.0
Total Alkalinity (as $CaCO_3$) ..	2.6	5.4	5.6	2.2	2.8	111
Total Hardness (as $CaCO_3$) ..	5.4	5.5	5.0	4.8	5.0	136
Carbonate Hardness (as $CaCO_3$)	2.6	5.4	5.6	2.2	2.8	111
Chlorides (as Cl)	4.4	4.2	3.9	4.3	3.8	32
Iron (as Fe)	0.25	0.22	0.13	0.52	0.37	7.6
B.O.D. in 3 Days	0.5	0.8	0.4	0.6	0.7	1.3
Oxygen Absorbed from Permanganate in 4 hours ..	1.7	1.4	1.0	2.0	1.7	2.7
Total Solids	60	39	48	42	39	255
Suspended Solids	26	5	6	9	11	26
Organic Solids	22	22	21	33	27	106
Inorganic Ash	38	17	27	9	12	149
Colour (Hazen Units) ..	58	19	19	42	44	73
Turbidity (Silica Units) ..	30.9	6.1	8.5	9.6	9.4	30.0
pH value	6.0	6.5	6.2	6.0	6.2	6.3

Table 183

TREATED WATER

FROM CLEAR WATER TANK

Average results of Monthly samples, 1962
(Results in Parts Per Million)

——	Tebrau River	Gunong Pulai	Woodleigh	Bukit Timah	Bedok
Ammoniacal Nitrogen ..	0.13	0.33	0.22	0.20	0.99
Albuminoid Nitrogen ..	0.03	0.06	0.06	0.05	0.10
Nitrite Nitrogen	trace	trace	trace	trace	trace
Nitrage Nitrogen	0.09	0.05	0.05	0.05	0.32
Carbon Dioxide	0.4	0.1	0.5	0.8	4.9
Total Alkalinity (as $CaCO_3$) ..	13	11	8	9	101
Total Hardness (as $CaCO_3$) ..	27	28	31	32	161
Carbonate Hardness (as $CaCO_3$)	13	11	8	9	101
Chlorides (as Cl)	5.0	5.1	4.0	5.5	29.3
Iron (as Fe)	0.10	0.10	0.12	0.11	0.20
Soluble Alum (as Al) ..	0.33	0.42	0.48	0.39	0.10
Total Residual Chlorine ..	0.53	0.91	0.60	0.48	0.59
Oxygen Absorbed from Permanganate in 4 hours ..	0.4	0.6	0.6	0.6	0.9
B.O.D. in 3 days	0.5	0.2	0.4	0.2	0.4
Total Solids	50	53	49	53	299
Suspended Solids	2.4	0.8	1.0	1.3	1.8
Colour (Hazen Units) ..	5	5	6	5	5
Turbidity (Silica Units) ..	2.0	0.7	1.0	0.5	1.2
pH value	7.8	8.2	7.4	7.2	7.4

MISCELLANEOUS SECTION

The number of samples for this year was almost double that for 1961 owing to increased samples received from the Customs and Excise Department, other government departments and commercial sources.

General

Four hydrometers were checked as to their accuracy and calibrated for the Customs and Excise Department and it was recommended that these hydrometers be discarded.

Nine samples of copra from commercial firms were analysed for their moisture contents in connection with storage in cargo ships.

The Police Force submitted two samples of cloth for a check of their colour fastness and shrinkage on washing.

Metals, Minerals and Chemicals

Eighty-eight samples (as compared with 47 samples for last year) of sodium arsenite were submitted by various commercial firms for compliance with the statutory colour requirement of the Federation Poisons (Sodium Arsenite) Ordinance 1949.

All were found to have colouring matter whose intensities complied with that prescribed in the Ordinance. Three commercial samples of sodium arsenite were submitted for assay of content of arsenious oxide. The blue colour of one of these three samples was required to be tested and was found to fail the prescribed test. One sample of sodium arsenite having no colouring matter was submitted by the Superintending Pharmaceutical Chemist for assessing the amount of methylene blue to be added in order that it would comply with the statutory colour requirement of the Ordinance.

Three samples of iron ores and two samples of charcoal were analysed for the Economic Development Board.

The number of synthetic detergents submitted by the Customs and Excise Department has again increased, 89 as compared with 65 for 1961. These samples were for analysis as to the presence or absence of soap since the Customs (Protective Duties) Order, 1960 levies duties on soap but not on synthetic detergents. Six samples, declared as isopropyl alcohol, were submitted for conformity as to their identities.

The Central Supplies Office submitted 11 samples of soap and one sample of hydrated lime for analysis and compliance with their specifications. One sample of soap was found to fail the specifications in respect of weight. Its weight was approximately 60 per cent of the requirement. The other soap samples were found to be up to specifications. The sample of hydrated lime was found to fail the specifications in respect of contents of calcium hydroxide and calcium carbonate.

The City Water Department also submitted 91 samples of chemicals such a, granulated alum, hydrated lime, sodium silicate, sodium bicarbonate, sodium silicofluoride, sodium aluminate and filter sand for analysis and compliance with their specifications. Thirty-nine lots of analytical reagents were prepared for the Water Department and 17 samples of soil were analysed for sulphate contents and pH.

The Primary Production Department submitted two samples of fertilizers and 82 samples of soil, the latter for assay of total soluble salts and total chlorides.

Book preservatives were prepared for the Registry of Deeds, Dewan Bahasa Dan Kebudayaan Kebangsaan, State Coroner's Court, phenolised starch paste for the Commissioner of Registration, solution for testing residual hypo on films for the Chief Surveyor and photographic developer solution for the Chief Administrator's Department.

Microfilm

Out of 590 samples of microfilm tested for residual hypo content for the Chief Surveyor, one sample was found to contain a residual hypo content of 0.004 milligram per square inch and three 0.003 milligram per square inch.

Oils

The Boadcasting Division submitted 144 samples of transformer oil for acidity tests and 11 samples of anti-malaria oil were analysed for the Health Division.

Out of 30 samples of liquid hydrocarbon received from the Customs and Excise Department, six samples were for flash point determinations, two samples for court cases in connection with possession of dutiable petrol and 22 samples for classification in connection with revenue collection. Out of the 22 samples, 13 samples were recommended as "Petroleum" as defined in the Customs Ordinance, 1960 and nine samples were recommended as non petroleum.

The Singapore Fire Brigade submitted 23 samples to see whether they were "petroleum" as defined in the Petroleum Ordinance or whether they could be classified under the definition of "cellulose solution" under the Cellulose Solution By-laws. Three samples could not be classified under the Cellulose Solution By-laws, 11 samples were not "petroleum" and the other nine samples were "petroleum" under the Petroleum Ordinance.

Table 184

MISCELLANEOUS SECTION

DISTRIBUTION OF WORK 1962

	SOURCE								
——	Customs	Medical	Police	Water Department	Public Works Department	Parks and Recreation	Other Deparments	Non Official	Total Samples
General	5	3	2	5	1	..	7	43	66
Metals, Minerials and Chemicals ..	95	1	..	130	9	1	131	134	501
Microfilm	..	..	..	..	..	..	590	..	590
Oil	30	12	..	..	1	..	167	6	216
Total ..	130	16	2	135	11	1	895	183	1,373

REVENUE SECTION

Under this heading is the vital work carried out by the Department of Chemistry in assisting the Customs and Excise Department in the assessment of duties. It does not include the preventive and other aspects of Customs' work which can be found in the Forensic and other sections.

This year the total number of samples under this section showed an increase, 6,403 as compared with 5,984 for last year. Although there was a decrease in non-official samples, 313 as compared with 538 for last year, there was an increase in the samples submitted by the Customs and Excise Department, 6,090 as compared with 5,446 for last year. The number of liquor samples analysed was 5,078, as compared with 4,677 for last year, showing an increase of 401 samples. Since duty is assessed on the spirit strength and volume of the liquor, the utmost accurate analytical determinations must be carried out and these were confirmed by the results of the monthly checked samples of liquor sent in by the Customs and Excise Department.

European-type liquors

There has been an appreciable increase of 404 in the number of liquor samples of the above type submitted by the Customs and Excise Department. Apart from the determinations of spirit strengths and volume, they were checked for compliance with the Food and Drugs Regulations, 1957, which specify spirit strength minimum for some types of liquors, limiting values for lead and copper contents and labelling requirements. Not infrequently, letters were written to the respective importers when the liquors did not comply with the Regulations so that they could notify the suppliers.

Four samples of brandy and four samples of rum with less than the minimum of 75.0 per cent proof spirit and one sample of brandy with an ester content of only half the permitted minimum value were refused classification as such and had to be classified as "intoxicating liquor not elsewhere specified".

One whisky sample from a commercial firm, on account of its low ester, furfural and acidity values, was also classified as "intoxicating liquor etc." although its spirit strength was over 75 per cent proof spirit.

For the first time boubons and sweets containing liquors such as gin, rum, vodka and brandy were submitted by the Customs and Excise Department for analysis and classification. The alcoholic contents found varied up to 5.4 per cent by weight.

The boubons of one particular brand were found to contain measurable quantity of liquid. On anlysis the average alcoholic content of the liquid was found to be 24.3 per cent proof spirit.

Samsoo

There was a slight decrease in the number of Chinese liquors submitted for analysis, 3,350 as against 3,653 in 1961. Approximately 14 per cent of these liquors were from distilleries in Singapore.

One sample, from a lot of 70 gallons from a local distillery, was found to have a copper content of 8 parts per million. It was recommended that its sale to the public be prohibited unless the copper content could be reduced to below the permitted limit. This lot of *samsoo* was, however, subsequently destroyed under Customs' supervision. Another sample from the same distillery was found to have a copper content of 5 parts per million, the maximum permitted under the Food and Drugs Regulations. The distillery was notified of the fact and was requested to take steps to reduce the copper contents of future samples.

In samples of imported *samsoo* the lead and copper contents were found to be within the permitted limit. Labels which did not comply with the labelling requirements were still being encountered and importers were advised of the fact by letters.

Methylated Spirit

An appreciable increase was recorded this year in the number of methylated spirit samples analysed for adequate methylation, 1,012 as compared with 769 for the previous year. This was due to inadequate methylation being detected and more samples have to be submitted for checking. Normally 10 per cent of the total number of drums from a consignment were submitted for checking. However, in two consignments, inadequate methylation was detected in samples from the first and second 10 per cent samples. Hence all the remaining drums from each of the consignments have to be checked. In all a total of eight drums were found to contain insufficient or no kerosene. These drums were subsequently treated with 1 per cent kerosene.

Eight samples of denatured alcohol, one containing 1 per cent diethylphthalate, one containing 5 per cent methyl alcohol and six containing a mixture of 5 per cent methyl alcohol and 1 per cent kerosene were recommended classification as Industrial Spirits. In one instance a sample, claimed to be Industrial Spirit, was submitted by a local firm and was found to contain no methyl alcohol, pyridine and kerosene. The sample was ethyl alcohol and dutiable under the Customs Ordinance. Hence it was recommended that it be classified as "ethyl alcohol, not denatured, including rectified spirit".

Denaturation

The number of drums of alcohol denatured showed a decrease, 189 as compared with 375 for last year. Alcohol for use in the various industries is allowed free of duty if it is treated with suitable denaturants.

Five per cent essential oil or 1 per cent dimethylphthalate was required to be added to alcohol for use in perfume manufacture in Singapore. However, the Federation Customs require as denturants 2 per cent essential oil, 1 per cent dimethylphthalate and 5 per cent methyl alcohol. 137 drums, representing nearly 73 per cent of the total number of drums denatured, were denatured in accordance with either of the above requirements. Drums of denatured alcohol to be sent to the Federation of Malaya have to be sealed by the Chemist and 100 such drums were sealed.

For use in the tobacco industry, 27 drums were denatured with tobacco dust (one pound tobacco dust to every 6.3 imperial gallons of alcohol). Denaturation with 5 per cent methyl alcohol or 1 per cent kerosene accounted for the remaining drums.

Toddy

The number of toddy samples analysed increased considerably, 342 as compared with 41 for 1961. The standard of these samples was higher than that of last year, about 78 per were classified as good, that is pure fresh toddy, and only about 3.5 per cent were classified as bad owing to either added water or overfermentation or both. One of these bad samples was found to contain no added copper sulphate preservative and was invariably grossly overfermented.

Rubber Latex

A total of 32 samples of rubber latex, double that of last year, was submitted by commercial firms for analysis as to their dry rubber contents and specific gravities in connection with assessment of duty. Two samples were found to contain air bubbles and these have to be removed by centrifuging before analysis.

Table 185

REVENUE SECTION

DISTRIBUTION OF WORK 1962

Class of Work	Customs	Source Non-Official	Total Samples
Denaturation of Spirit ...	—	189	189
Liquors:			
European type ...	1,387	2	1,389
Samsoo	3,349	1	3,350
Toddy	342	—	342
Methylated Spirit, etc. ...	1,012	89	1,101
Rubber Latex	—	32	32
Total ...	6,090	313	6,403

TOXICOLOGY SECTION

Blood, Urine, etc. for Alcohol

Determination of ethyl alcohol in blood, urine and other specimens continued to be carried out. Of the 355 specimens, from 208 cases, most of which were blood and urine, were 28 specimens of vomits and stomach washouts.

Most of these specimens were received from the Casualty Department of the General Hospital when doctors needed confirmation in their findings whether their patients were under the influence of intoxicating liquor or otherwise. These had to be investigated in cases involving drunken driving, fighting, disorderliness while being drunk, accidents, etc.

A number of specimens was also received from the pathologists for similar reasons.

A few determinations were also carried out on non-official samples. These were analysed on behalf of the military services, the hospitals in the Borneo territories and, in one case, a private doctor.

Clinical Specimens

The number of clinical specimens this year showed a large increase because the integration of the City Analyst's Department with this Department brought in a large number of analysis of urine specimens for fluorine contents. These specimens came from workers in the water treatment works of the Water Department who had to handle large quantities of sodium silicofluoride which are added to the water supplies of the State. In view of the poisonous nature of this chemical, the checking of fluorine in the urine of the workers was made routine. When the fluorine contents found were high, more frequent sampling from the particular workers was advised.

Most of the other specimens were urine received from the Opium Treatment Centre and the Casualty Department of the General Hospital. These were analysed to provide the doctors with confirmatory evidence as to whether the patients had been smoking opium or otherwise.

All the rest of the specimens were mainly for the determination of lead and arsenic while there were a few for the presence of sulpha drugs, copper and mercury.

Poisoning Cases

In 1962 the amount of analysis carried out in this section, viz. on specimens of organs, stomach washouts, exhibits etc. for presence of poisons, was about that in the previous year.

As usual in poisoning cases, a large variety of poisons or materials intended as poisons were detected. These are listed in the table 186 at the end of this section.

The number of cases involving sodium hydroxide was 29 as compared with 39 for last year. This material, in spite of legislations controlling its free sale, continued, because of its usefulness in laundrying, to find its way into households and consequently provide a ready means for committing suicides.

There were also cases where sodium carbonate, or washing soda, were detected instead. It was possible that this was taken under the impression that it was caustic soda. Needless to say any damage caused by this substance was very small compared with that caused by the drastic caustic soda.

However, cases involving the use of the more sophisticated types of poisons for committing suicides showed an increase, probably an indication of the sign of the times. These were the hypnotics and tranquillizers, e.g. the various barbiturates, gluthethimide, "Melsidine", "Dormwell", meprobamate, the various phenothiazines, etc.

It may be worthwhile to note here that the number of cases of brominated ureides like carbromal and bromural (found in "Relaxa Tabs"), showed a sharp decrease from the previous year's figure of 23 cases. This may be due to the fact that in September 1961 these drugs were for the first time brought under control by including them as "listed poisons" and hence no more freely available to the public.

Again as usual there were the large number of cases involving various common household materials which although were not strictly poisons nevertheless could and did produce ill effects. These included calamine lotion, detergent, soap, household bleach, kerosene, ink, gentian violet, liniment, braso, dettol, nixoderm, etc. In most of these cases the swallowing of these materials were either accidentally, especially by children, or probably by people who actually intended to frighten somebody else without really killing themselves.

As a contrast there was a case of attempted suicide by a person taking "sonalgin". He was saved in time. However one month later he again took sonalgin and to ensure his success this time, he hanged himself as well. On both these occasions, the presence of sonalgin was confirmed in his specimens.

Other examples were in cases of suicide pacts involving two couples. Although here the cause of death in one couple was drowning and in the other due to falling from the top of a multi-storey building, their stomach were shown to contain respectively fixed alkali and proflavine.

Among the more unusual exhibits examined was one received from the Borneo territories. This was intended to be used as a poison by a Dayak against another but was fortunately not administered. The one who was asked to do so reported and gave it up to the police. On examination in the laboratory, it was found to consist of powdered glass and bamboo hairs. This later was confirmed by the Botanic Gardens. Powdered glass was well known as an irritant and bamboo hairs while having a reputation in this part of the world for being also very irritant, had an aura of being semi-legendary or mystical in its usage as a poison. Under the microscope these hairs were seen to possess extremely sharp splinter like ends. There would be hardly any doubt about the horrible effect these hairs might produce if ingested. Being so inert their effectiveness was long lasting.

Another vegetable poison received was the diffenbachia plant. Although this was very commonly found as a decorative household plant, its poisonous nature was hardly known among members of the public and, as in the cases connected here, children were apt to be poisoned when they playfully chewed it. Fortunately these were not fatal cases.

There was a case of accidental poisoning when a family of four suddenly developed vomitting after taking a meal. It appeared that their rice which was apparently normal had a distinct pale blue colour after cooking. Nevertheless it was taken and the painful symptoms developed. This background story immediately called to mind the possibility of the poison being arsenic as sodium arsenite was, and still is, imported into this country in large quantities, dyed a blue colour. The stomach washouts from two of the patients were submitted. On analysis these, as well as the rice, both cooked and uncooked, were shown to contain substantive amounts of arsenic.

Opium was still frequently encountered in toxicology in cases of both suicides and accidental poisoning. Of particular interest were three cases where it was stated that infants were given either opium to smoke or morphine by injection by their relatives as household remedies for some illness. Needless to say, they developed coma and had to be treated by the hospital. Morphine and other alkaloids of opium were detected in their urine.

There was one case of morphine poisoning which became prominent because it involved a British soldier who died soon after receiving an injection of morphine. This alkaloid was detected in a number of his organs.

There was also received from the Borneo territories some organs from a fatal poisoning case possibly accidental. Pentachlorophenol, the wood preservative, was suspected and when the organs were analysed, traces of it was detected.

In one case, metallic mercury was detected in a stomach washout when a patient in a hospital broke a thermometer in his mouth. Also as a check whether he developed mercury poisoning as a result of this, his urine was also later analysed. No mercury however was detected in this specimen.

Poisoning of dogs were also investigated. There were three different occasions involving nine dogs which were poisoned by house-breakers. In all these cases, large amounts of strychnine and brucine were detected in the stomach contents.

In one case, amylobarbitone, a hypnotic, was detected in the vomit of a dog. The dog recovered.

Among the specimens and exhibits analysed and for which no poison was detected, an appreciable proportion was actually in cases suspected to be due to bacterial food poisoning. Nevertheless, analysis in these cases were requested in order to rule out the possibility that chemical poisons, e.g. heavy metals, etc., were responsible.

Among these also were a number of cases where wild mushrooms or toadstools were known to have been taken, and hence these were strongly suspected to be the cause of the poisoning. Again in another case involving two persons, a kind of puffer fish was known to have been taken. It was common knowledge that puffer fishes were poisonous. It was said however that they could be consumed, and in fact, were declared as being particularly tasty, if they had been cut up in a special manner by "experts". That this particular puffer fish had not been expertly processed was a likely possibility. However in all these cases of mushroom and puffer fish poisoning no satisfactory chemical test was available.

Table 186

SUBSTANCES FOUND AND NUMBER OF CASES

Agyrol	1	Lead	2
Alcohol	8	Librium	2
Amylobarbitone	4	Malathion	4
A.P.C.	3	Melsidin	4
Arsenic	2	Mercury	2
Ash	1	Mecurochrome	1
Aspirin	1	Mepacrine	1
Aureomycin	1	Meprobamate	2
Bamboo hairs and broken glass	1	Mepyramine	1
Barbiturate	37	Methylene blue	1
Benzenehexachloride	3	Methyl salicylate	19
Borate	2	Methylated spirit	1
Brasso	1	Morphine	9
Bromide	1	Nitric acid	1
Brominated ureiles	4	Nixoderm	1
Buclizine	1	Noludar	1
Butobarbitone	3	Opium	16
Camphor	5	Paracetamol	1
Carbon monoxide	5	Penicillin	1
Chloral hydrate and promethazine	2	Pentachlorophenol	1
Chlorpromazine	4	Phenacetin	4
Cineole	1	Phenazone	1
Codeine	6	Phenobarbitone	5
Copper salt	1	Phenolphthalein	3
Cyanide	1	Phenothiazines	8
Cylinder oil	1	Piperazine	1
Dapsone	2	Potassium permanganate	3
D.D.T.	3	Proflavine	2
D.D.T. and benzene hexachloride	6	Promazine	2
Detergent	13	Promethazine	4
Dettol	11	Pyrimethamine	1
Diazinon	4	Quinine	2
Digitalis glycoside	1	Reserpine	1
Diffenbachia	4	salicylic acid	9
Dormwell	5	Salicylic acid and phenacetin	1
Ephedrne	3	Santonin	1
Ergot	1	Sonalgin	3
Ferrous sulphate	2	Soap	6
Formic acid	2	Sodium hydroxide	29
Franol	2	Sodium carbonate	4
Gentian violet	1	Strychnine	1
Gluthethimide	4	Strychnine and brucine	3
Hypochlorite	4	Sulpha drugs	6
Ink	1	Thoridazine	1
Iodine	3	Tuba resin	1
Isoprenaline sulphate	1	Turpentine	2
Jeyes fluid and other phenols	4	Zinc	3
Kerosene	8	Nil	240

Table 187

TOXICOLOGY SECTION

DISTRIBUTION OF WORK 1962

Class of Work	SOURCE						
	Medical	Police	Water Department	Other Departments	Non-Official	Total Samples	Total Cases
Clinical Specimens ..	299	..	423	..	..	722	..
Blood and urine for alcohol	348	..	..	..	7	355	208
Poisoning cases:							
Exhibits ..	87	83	..	..	5	175	603
Specimens ..	831	9	..	2	23	865	
Total ..	1,565	92	423	2	35	2,117	811

DANGEROUS AND HAZARDOUS MATERIALS SECTION

Dangerous Goods

Seven requests as compared with 18 for 1961 involving 327 goods items were made by the Singapore Harbour Board for classifying dangerous goods in transit or to be landed at the State of Singapore. Of these items, 320 were connected with the proposed reprinting of the Singapore Harbour Board's Dangerous Goods List.

Explosives

Three inspections of blasting explosives, detonators and fuses, involving 19 consignments to be landed in Singapore were carried out on board the ships. A total of 51 industrial explosives compared with 53 for 1961 were examined for stability and exudation as prescribed under the Arms and Explosives Ordinance. All were found fit for importation into the State of Singapore. No inspections were carried out on twenty-seven consignments of industrial explosives on transit in the port.

Two hundred and twenty certificates (Form *H*) permitting the landing or the off-loading into lighters (in the case of transit cargoes) of explosives including fireworks and small arms catridges were issued.

One hundred and fifty-seven samples of fireworks were examined (compared with 101 for 1961). Of these numbers, two were examined for the Customs and Excise Department, 94 for the Police and 61 were unofficial commercial samples. There were no unofficial commercial fireworks examined in 1961.

In every case the fireworks were examined as required under the Arms and Explosives Ordinance which prohibits the importation, manufacture or possession of any firework composition or manufactured firework containing a chlorate or phosphorus or picric acid or any picrate or of any manufactured firework containing more than one-fifth of an ounce of explosives composition except with the prior permission of the Commissioner of Police. The foregoing prohibition does not apply to amorces (caps or igniting tapes for toy pistols), or signals for use by ships or aircraft, or to Christmas crackers or bon-bon crackers or the snaps therefor or where used solely as a friction primer composition.

There is also prohibition of the importation, manufacture or possession of sand crackers or any squib or cracker which contains an explosive ingredient of mixture other than black gunpowder and any squib or cracker containing more than one-fifth of an ounce by weight of such black gunpowder.

Of the 94 samples sent in by the Police, three were found to be prohibited ones: one was "friction-cracker" containing phosphorus and chlorate, another was "fire-crackers" containing potassium chlorate, aluminium powder, carbon and sulphur (an explosive mixture other than black gunpowder) and the other, a "sparkler", was found to contain more than one-fifth of an ounce of composition.

Both the sample sent in by the Customs and Excise Department were prohibited ones: one was "fire-crackers" containing an explosive mixture which was not black gunpowder and the other was a "friction-cracker" containing phosphorous and chlorate.

Of the 61 unofficial commercial fireworks analysed, seven conforming with the requirements of the Arms and Explosives Ordinance were recommended as fit for importation.

On behalf of the Police, 35 inspections of magazine-stores were made in connection with the renewal of licences. One inspection was conducted to examine a site for the building of a new magazine to store industrial explosives in quantity.

Two new small magazine-stores were being built to replace their old counterparts: one was completed during the year and should be ready for use.

Petroleum

The number of petroleum samples tested for flash point showed a decrease, 734 as compared with 1,018 for 1961. The majority of the tested samples were from bulk shipments which accounted for approximately 95 per cent of the total samples compared with about 91 per cent for 1961. The decrease in number of samples tested is consistent with and to be expected with the increase in number of bulk shipments.

All samples tested were non-dangerous petroleum (i.e. petroleum with flash point above 73°F) except for two samples of special "Turbo Fuel" which were found to flash below 50°F.

Ships which had carried dangerous petroleum are statutorily required to be 'gas-free' of inflammable vapour before they can proceed to dock or wharf for repairs in the State.

In this connection 809 ship inspections were conducted — 29 more than the figure for 1961. Approximately 30 per cent of these were re-inspections of the ships. On 19 occasions the ships were found to be not "gas-free" and required further cleaning.

Trade Effluents

Twenty-seven samples of trade effluents were analysed of which 20 were done for the Health Department and 7 for the Primary Production Department.

The samples were taken from premises working with sago, rubber, soap and oil, guttapercha, and petroleum, and were examined for pH, solids content, oxygen absorbed and B.O.D. in connection with their suitability for discharge. In the majority of cases the trade wastes were found to require treatment.

Inspections of Premises and Dangerous Occurrences

A total of 19 inspections of premises were done compared with 3 in 1961 of which 8 were for the Police, 9 for the Health authorities, 1 for a statutory board and 1 for the Singapore Fire Brigade.

Two premises, one at Jurong and the other on Pulau Ubin, were inspected in connection with the use of explosives for blasting concrete structures in demolition work.

A cylindrical metal tank measuring 10 feet long and 5 feet in diameter exploded when it was cut with an oxy-acetylene torch. The tank was examined after the explosion and found to contain residual rust giving off vapour smelling of petroleum. Analysis showed the rust to contain 2 millilitres of inflammable mineral oil per 100 grams of rust. Apparently the tank had not been cleaned and inspected for freedom from inflammable vapour before cutting with a naked flame.

Two cases of fire involving jute and hemp in the Harbour Board Godowns were investigated. In both cases the material were in bales and no evidence of any inflammable liquids such as petrol was found to be present. It is recognised as set out in *Aeby, Dangerous Goods,* 1938 3rd Edition "that most fibres and more especially jute may heat themselves in certain conditions of ware-housing, at certain degree of dampness, etc. With jute especially, fires, whose cause remains unexplained, are pretty frequent".

In another case of fire and explosion which was investigated, napthalene "moth-balls" were melted down and re-moulded into fancy shapes in a household kitchen. The kitchen was recessed and insufficiently ventilated and the accident was seen to be due to the building up of an explosive napthalene-air mixture which was ignited by the naked flames of the kitchen stove.

Two sites, one at Redhill Industrial Estate and the other at Ponggol were inspected in connection with the disposal of caustic soda wastes from an oil refinery. The one at Ponggol near to wells was found unsuitable. At Redhill, the wastes were recommended to be neutralised first with sulphuric acid and then tested for neutrality before being discharged in lots every few days.

One case of trade wastes in drums dumped on land and destroying valuable fruit trees in the neighbourhood was investigated and it was found that the wastes in this case contained 25 per cent weight by volume of sulphuric acid.

One back lane at Albert Street was inspected where there were dense fumes in the atmospher covering the neighbourhood. Examination showed that one leaky old drum of chlorosulphonic acid produced the fumes when damp air and moisture came into contact with it. The leaky drum was put into another drum and dumped into the sea by the Police.

One underground "well" at Delta Circus which formed part of the telecommunication system in the State was inspected when workmen reported experiencing ill-effects while working inside the well. Investigation showed the air to be free from inflammable gases as well as hydrogen sulphide and carbon monoxide but it was found that the atmosphere was deficient in oxygen to the extent of 7 per cent and had an excessive concentration of carbon dioxide — 6 per cent being present in the "well".

One elctroplating works was inspected. It contained a large visible amount of dust. Before any proper assessment of the dust hazard in the working atmosphere in the premises could be made it was suggested that a general clean-up of the premises be made.

Two lots of consumer goods were examined for contamination with corrosive substances. In one case 88 bags of sugar out of a sample of 192 bags were found to be contaminated with sulphuric acid. In the other case tobacco stored in the same cargo space as sodium hydroxide was suspected of contamination. Examination of the casing of one tobacco-case showed evidence of caustic contamination. In both cases the Health Authorities were advised of the findings.

Table 188

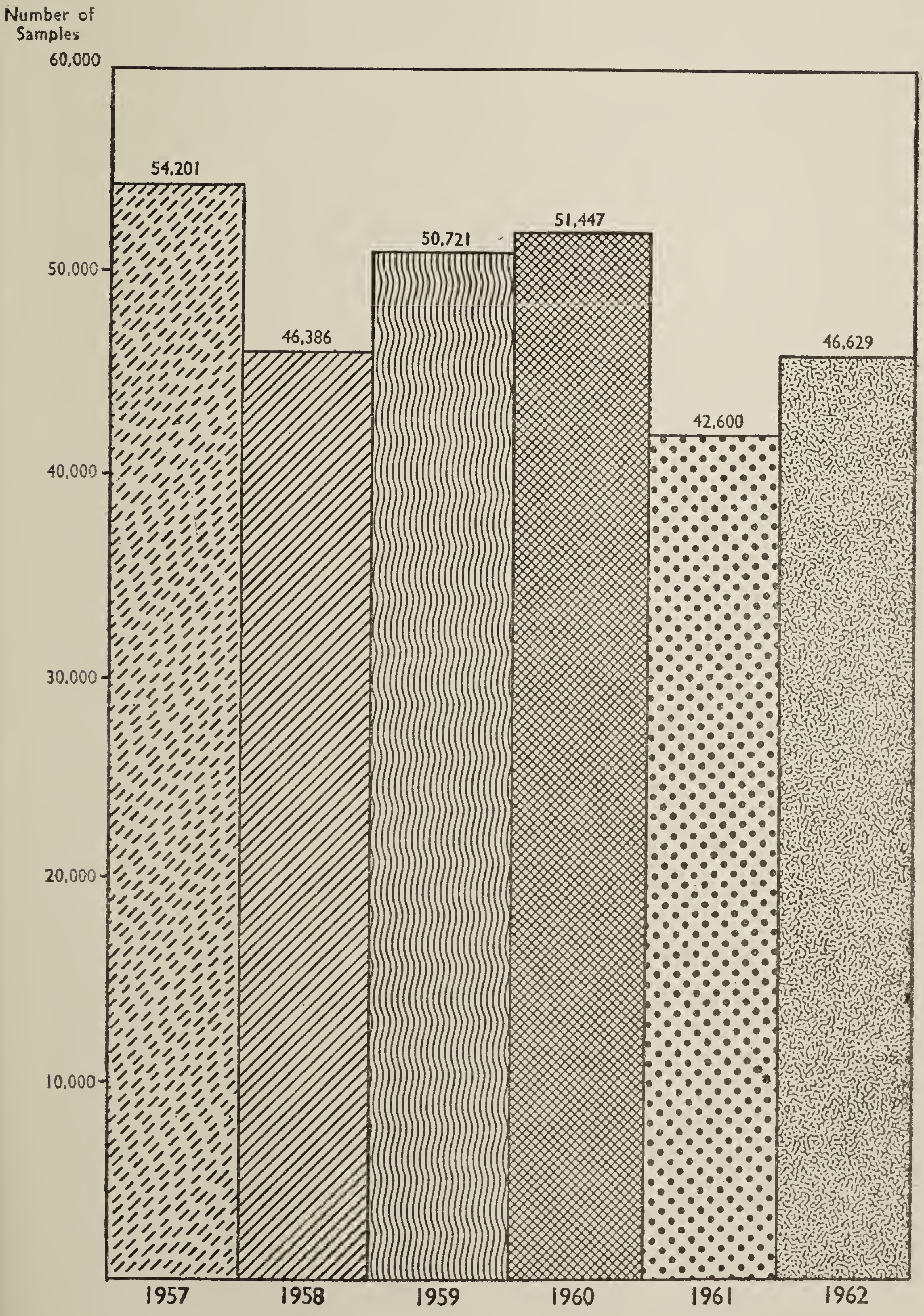
DANGEROUS AND HAZARDOUS MATERIALS SECTION

DISTRIBUTION OF WORK 1962

Class of Work	SOURCE						
	Customs	Medical	Police	Other Departments	Non-Official	Total Samples	Total Cases
Explosives:							
Inspection	..	..	220	..	..	220	..
Industrial	..	..	..	..	51	51	..
Fireworks	2	..	94	..	61	157	3
Magazines	..	..	36	..	..	36	..
Petroleum Ordinance:							
Flash-point test	..	..	..	..	734	734	..
Ship inspections	..	..	..	..	809	809	..
Trade Effluents	..	20	..	7	..	27	..
Inspections and Dangerous Occurrences	..	9	8	1	1	19	..
Total	2	29	358	8	1,656	2,053	3

TOTAL SAMPLES ANALYSED BY THE DEPARTMENT OF CHEMISTRY AND THE CITY ANALYST'S DEPARTMENT

1957–1962



APPENDICES

Appendix VII

STAFF LIST

DEPARTMENT OF CHEMISTRY AND INSPECTORATE OF DANGEROUS MATERIALS

Chief Chemist and Chief Inspector of Dangerous Materials: Chia Chwee Leong, B.SC., M.SC., F.R.I.C.

Deputy Chief Chemist and Deputy Chief Inspector of Dangerous Materials: Chia Hong Hoe, B.SC., M.SC., D.I.C., A.R.I.C. (City Analyst's Department) (Acting).

Senior Chemist and Senior Inspector of Dangerous Materials: Lim Chin Hua, B.SC., D.I.C., A.R.I.C.

Chemists and Inspectors of Dangerous Materials:

Lee Kum Tatt, B.SC., Ph.D., A.R.I.C., M.C.I.C. (1-1-62 to 14-8-62).
Phang Sing Eng, B.SC., M.SC., A.R.I.C.
Tan Jake Meng, B.SC., Dip. Chem., Eng., A.R.I.C.
Chou Kai Chih, B.SC., M.SC., D.I.C., A.R.I.C.
M. C. Dutt, B.SC., M.SC., A.R.I.C.
Theng Chye Yam, B.A. (Mod.), M.SC.
Lim Han Yong, B.SC.
Phang Pui Yeong, B.SC.

Assistant Analyst: Teo Teng Poh, B.SC. (City Analyst's Department).

Document Examiner: Ch'ng Beng Han, B.SC. (Acting).

Assistant Inspectors of Dangerous Materials: Ch'ng Beng Han, B.SC., Ang Eng Ann, B.SC., Aw Soon Cheong, B.SC.

Senior Laboratory Technicians: Two.

Laboratory Technicians: Four.

Laboratory Assistants: 10 (six from City Analyst's Department).

Executive Officer: One.

Clerical Officers: Four.

Clerical Assistant: One.

Typists: Three (one from City Analyst's Department).

Storeman and Packer: One (City Analyst's Department).

Laboratory Attendants: 21 (six from City Analyst's Department).

Watchman: One.

Appendix VIII

DISTRIBUTION OF LABORATORY WORK

Sections	SOURCE									
	Customs Department	Medical Department	Police Force	Water Department	Public Works Department	Parks and Recreation Division	Other Departments	Non-Official	Total Samples	Total Cases
Forensic	403	23	3,312	..	..	..	56	169	3,963	932
Health	223	3,501	..	..	..	..	..	43	3,767	644
Water and Sewage ..	..	130	..	19,163	3,017	4,179	43	421	26,953	..
Miscellaneous	130	16	2	135	11	1	895	183	1,373	..
Revenue	6,090	..	..	..	..	..	..	313	6,403	..
Toxicology	..	1,565	92	423	..	..	2	35	2,117	811
Dangerous and Hazardous Materials	2	29	358	..	..	..	8	1,656	2,053	3
Total ..	6,848	5,264	3,764	19,721	3,028	4,180	1,004	2,820	46,629	2,390

Appendix IX

PUBLICATIONS

A Colour Test to distinguish between the Fruits of Illicium Verum and Illicium Anisatum L. S. E. Phang, M. C. Dutt and Thng Soon Tee — *J. Pharm. Pharmacol.*, 1962, 14, 108–109.

A Modified Procedure for the Determination of Isoniazid In Mixtures with Sodium p-Amino-Salicylate Lee Kum Tatt and Ho Yan Hon — *J. Pharm. Pharmacol.*, 1962, 14, 123–121.

APPENDIX X

MINISTRY OF HEALTH

FINANCIAL STATEMENT FOR THE YEAR 1962

Receipts

	$	c.
Licence Fees	809,902	40
Quarantine and Port Health	166,340	00
Sales of Medical Stores	180,881	37
Chemistry Department Fees	125,066	50
Laboratory Fees	66,853	00
Analysis Fees	83,357	15
Fees for Removal of Nightsoil, Refuse etc. ...	2,203,491	37
Rents	539,040	68
Hospital Bills	1,341,959	76
Slaughtering Fees and Pen Rents	715,608	30
Reimbursement of Electricity and Water Charges	105,315	92
Commission on Fish Sales	184,159	35
Miscellaneous Receipts	243,058	07
Balance borne by Public Revenue	51,847,868	60
	58,612,902	47

Expenditure

	$	c.	$	c.
Personal Emoluments			29,450,732	00
Anually Recurrent Expenditure:				
General	823,293	24		
Health Branch	15,546,332	78		
Hospitals and Dispensaries ...	9,421,109	50		
Chemistry Department ...	49,859	15		
			25,840,594	67
Special Expenditure:				
General	104,165	43		
Health Branch	594,212	22		
Hospitals and Dispensaries ...	172,359	82		
Chemistry Department ...	4,306	21		
			875,043	68
Development and Capital Expenditure			2,446,532	12
			58,612,902	47

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